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The Journal of
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AND

Training College Record.

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EDUCATION AS A DANGEROUS TRADE.

By HELEN WODEHOUSE, D.Phil.,
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WE need have no hesitation, I suppose, in admitting that every trade is dangerous to those who practise it. Every profession marks its members, and the mark tends to be of such a nature that every professional class despises every other and dislikes itself. In admitting that education is dangerous we are doing no more than bringing it under the common law, and the expression of public opinion gives us little chance of claiming exemption. No profession but that of the priesthood has rivalled us, probably, in the amount of public disapprobation that we receive. In Dr. Westcott's biography an old pupil writes of him, "He was too good for a schoolmaster." Westcott writes himself, "No one ought to be a schoolmaster more than fourteen years." Grammar school masters have been condemned since classical times at least. The "armchair professor," the "mere don," dry as dust, has passed into a proverb. The high school mistress, in various corners of literature, finds gradually growing up a representation of herself which will attract nobody. As for the teachers in the elementary school, a working man has described to me on the one hand the deep distrust of them which exists among working men; and the head of a training college has said to me on the other hand, "I like my students, but they are going to enter the most intolerable class in the world." Training colleges themselves have seldom appeared in literature as yet, but where they have begun to do so it is evident already that they are not to escape the treatment bestowed on the rest of the profession.

We are not to be expected, certainly, to receive all this as a purely just estimate of ourselves. We, like any other trade, suffer from certain special prejudices against ourselves in the public mind. There is the surprised dislike, for instance, felt by the ordinary man for those who have stayed where they were whilst he has moved on. Our children, our sixth form, our college students, pass on and leave us; they go, as they say, "out into the world;" they grow up and become the public; then they look back at us, still in the place where they knew us and still doing the same things, and they say, "Good Lord!"

It might be suggested that another prejudice must inevitably arise through disappointment of the expectations apparently formed about us. "Mr. F. R. Benson gave examples of the practical effects of folk-dance on the life of the people . . . . He reminded the conference how in slums and villages Miss Mary Neal had found despair and weakness, and failing intellects and bodies, and dying souls, and by the infusion of the rhythm of the folk-dance had changed their despair to hope and the joy of life."[1] Even teachers themselves will write thus; witness the following from a professor: "Once a student has been obliged to lay one little stone in the top course of a single turret of his science, he will ever after appreciate the difference between science and humbug, truth and opinion, scholarship and quackery, faddism and progress."[2] "The Mexican Kings," says Dr. Fraser, at their accession took an oath that they would make the sun to shine, the clouds to give rain, the rivers to flow, and the earth to bring forth fruit in abundance." To evade abuse after such hopes, we should do better to be kings and sit still, rather than present ourselves as prosaic officials engaged with smoke abatement, irrigation, and the distribution of chemical manures.

I asked a training college student why the public disliked us, and she suggested yet another reason for prejudice. "They are jealous of us because teachers are so well educated and can discuss a subject so well." I shall return to this presently. Meanwhile I propose to set out on the enterprise of discovering what there is in us, if anything, which gives real grounds for the dislike. Every other trade, it is granted, does something to those who practise it which justifies others in disliking them. It may be that teaching does so too. The more "noble" a profession is, indeed, the more dangerous in some ways it will be. The business of education, involving as it does the finest elements of many other kinds of business, will share the dangers of these, and will meet them often in the most intense and subtle forms.

A. Teaching possesses to an unusual degree the dangers which attend all specialization.

All specialists tend to over-estimate their own speciality, and our speciality, of intellect as such, is bad in this way because it is so constantly with us. It has been long with us; when we were school children we were probably some of the cleverest children in the class. Now that we are grown up, it is with us most of the day. We find many more opportunities for our speciality outside the classroom than a doctor finds outside the sick room or the business man outside his office. "We are so well educated, and can discuss a subject so well." Every conversation gives us chances, occasionally of doing that, more often of feeling that we could do it if our companions were worthy. Inside the classroom, of course, I need hardly remark how corrupting our position is. Our companions are chosen for us because they know less than we. We grow year by year into those mannerisms, inward and outward, for which the world hates us. We acquire "teachers' condescension," "the University manner," "the academic mind." All teachers are apt to be criticized for this, and it is perhaps the most general criticism brought by the working man against the teacher in the elementary school, who "thinks he knows everything." It is brought in literature, however, chiefly against the most specialist and the most intellectual members of our profession; the teachers on

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[1] Newspaper report, 1912.

[2] Professor Ross: "Social Psychology."

University staffs. It is for this fundamentally, I believe, that the man in the street dislikes the "don." It is often a mistake; the don may be a most modest person and ready to respect everybody; but his shyness will be interpreted as exclusiveness and his silence or talkativeness alike as scorn.

The non-academic public, suspecting him of despising it or of being about to despise it, retorts with accusations of a mixed nature. The teacher who is also a scholar is said to be "dry." This means partly, "you are not interested in what interests me," and may be brought by any profession as a charge against any other. We may hear it brought by science against philosophy, by the artist against the scientific student, by a soldier or sailor against an artist, by business men against the Services. It is always a true charge, because it rests on the lamentable smallness of the fund of interest which any human being has to dispose of. It is probably not more true of our profession than of any other. So far as the charge of dryness means more than a lack of common interests, it is partly a criticism of the temperament supposed to be commonest amongst those who enter the teaching profession, rather than a criticism of results of the profession itself, and to that extent it is not relevant to our present purpose. So far as it is relevant, as bearing on the results of teaching and studying, it is sometimes developed in an interesting way. We are "dry as dust," says the accuser, because we are "out of touch with reality." We are not living in the real world.

It seems poor-spirited to confess that I cannot go far in considering a charge of such interest and magnitude brought up in this way close to the beginning of my paper. The fact is that the charge is too big and too interesting. I do not understand at present nearly all that may be meant by the very important and philosophically very respectable opinion that one kind of actual life is less real than another kind. I can see a few elements in it, I think, varying in their philosophic value. As applied to the specialists in some subjects, the charge may mean that the person who describes or analyses other people's deeds is one remove further from reality than the people who do them. Hence professors of economics are despised as "armchair philosophers" by business men; and a novelist can contrast a history lecturer as a "man of theory" with a diplomatist as a "man of practice."[1] We share this blame, as far as it goes, with the poet and the painter, but it covers workers in certain subjects only. Another comprehensible version of the charge is brought by poor men against rich men as such. I remember an Oxford professor smarting because a Ruskin College student had told him that Oxford professors knew nothing of the realities of life. "What are the realities of life?" he asked piteously. "I believe I was born; I know I am married; and I expect to die." Other versions cover everyone who lives in a college, including the students. A woman novelist speaks of their "dream world of study and games."[1] I suspect the neighbourhood of an illusion which I mentioned before, resting on the beliefs (1) that preparation for life is not a part of life; (2) that we who prepare other people for life cannot be really living ourselves. But in some measure it is certainly a charge against the intellectual specialist as such, because it applies to honours students more than to pass students; so much so, that an article on proposals for University reform can assert that "English common-sense would not tolerate the existence of a community composed of dons and clever boys."

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[1] G. Fitzstephen: "More Kin than Kind."

I believe that another illusion has influence sometimes, in that our critics are apt to contrast our work, not with other people's work, but with other people's whole life. A teacher or scholar is said to be dealing with books, whilst others deal with realities—whilst the carpenter makes a real table, and the man of business sells it. Yet a mathematical principle might be admitted to be as real as a table; and the pupils whom we instruct in it are rather more real than tables. The fact is, that in this contrast the teacher is apt to be thought of as a teacher and nothing else, whilst the carpenter is recognized as a married man, and a member of a trades union. The contrast in mind is not between our work and his tables, but between our work and the rest of his life.

As I said, I am not able fully to analyse this charge of unreality. I must touch, however, on one important truth. We may be dry as dust, and we may lose touch badly with other lives, because we are solitary. The profession of a specialist in intellect, more than most professions, means isolation. We are a learned caste, a close trade. Not only are we busy people, whose work is not confined within any fixed hours, but the work itself isolates us. We do not mix well with our neighbours, and they, fearing and despising us at once, do not always give us the chance of trying it. The extreme case of solitude is that of the teacher in a country elementary school, but all of us suffer from something of the sort. I need not enlarge on the results of this, we know them too well.

B. It seems hard after this, yet it is really a natural connexion, that we should find teaching sharing, to some extent, in the dangers which belong to all professions that are partly dependent on public opinion. In the different ranks of our profession these dangers vary greatly in amount. They are probably smallest in the Universties. Outside these, we are apt to be like clergymen, and courtiers, and shop-keepers, and politicians, obliged to conciliate people whose opinions we think often unwise, and obliged to defer to that public opinion which consists so largely of what somebody thinks somebody else may think. The outcome in us is partly conventionality (of which we are now commonly accused in place of the "eccentricity" formerly alleged) and partly that state of resentful nervousness which makes clergymen write articles and preach sermons discussing what it is that the public really wants them to be.

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[1] "A Newnham Friendship."

C. Teaching shares the dangers attaching to all those professions in which it is difficult to measure success. This is a moderate statement. The fact is that it is impossible even to tell what work has been done. The man who makes a horseshoe, or paints a picture, has his work plain before him. He has created this; it would not have existed but for him. But we have not created our pupils, and it is hard to be sure that their improvement, when they improve, is due to our endeavours. Fathers and mothers, indeed, are in the same case with us here; but they have the love which does not care to whom the improvement is due. This difference brings me to a very large section of my inquiry, as follows:—

D. Teaching is partly an art, partly a natural human function, like parentage, and partly a trade. It has the exactingness of the first two, with the insufficiency of the third. It claims to be the centre of our lives, and it has not substance enough to fill the place. It cannot have the ample and enduring satisfyingness of art, except for a small proportion of its followers, if only because it needs too many of these. Nobody need be an artist who is not born for art, but the number of those who are needed for teaching is many more than the number of born teachers. Nor can it be satisfying as parentage is satisfying. The profession seems to claim the whole of us, yet, in fact, it can only take up a limited amount of us, as a trade would do. In teaching, we live trebly on the surface. We use the surface of the subject we teach, the surface of the people we deal with, and the surface of ourselves.

We live on the surface of our subject, and share thereby the dangers of the journalist and the showman and the debater—showiness, shallowness, twisting the matter to fit. We deal with scholarship, without having the time or strength or knowledge to be able to afford a scholar's conscience. If we can afford such a conscience, even in one only of the subjects we teach, the dangers of our trade are immensely diminished. If a teacher's nature and position enable him to know his subject better every year, and to contribute something to its advance, he has a spring of refreshment and reality which should save him from much. Without this, *corruptio optimi pessima*. The degeneration of a keen mind unused has consequences, mental and moral, of the most unpleasant kind.

We deal with the surface only of most of the persons with whom we have to do. It cannot be helped, there are far too many of them to allow us to deal intimately, even where the matters in hand are intimate. But it has its dangers. One effect is the peculiar fear and hatred that come upon one with the sight or thought of a crowd of people whose faces we know without knowing much more. This is unpleasant, but less dangerous than the more insidious effects which we share with the professional despot. Our real risk belongs to all those whose habitual companions are expected to obey them. It is all too easy. They need not persuade or convince, like other people, they need only express their wishes to have them carried out, or to be sure that they ought to be carried out. We need not become arbitrary, though we may become careless—I have seen surprising instances of rudeness and callousness on the part of really kind and well-meaning teachers who have dealt with docile pupils for too many years. But, in any case, a teacher, and especially a head teacher, lives of necessity in a peculiarly organized and, in that sense, an "unreal" world. Where, with governors or inspectors or subordinates, we meet with the resistance or friction which the ordinary man meets everywhere, we get little good from it on account of our righteous indignation. Consider the outburst in Thring's letters and diaries:—"Strange what a perpetual struggle this life is. The masters are now engaging in a contest for power with me, and carping daily at something. . . . I am getting more and more convinced that I cannot govern these men; that I have failed. . . . The whole body of elder masters has set itself resolutely against my government, and are determined to contest, singly and collectively, everything which does not please them, as on equal terms with me. . . . I am in the habit of hearing and consulting much, but not one hair's breadth will I ever give way where it is claimed as a right." It may be that this position was necessary for the good of the school. It can hardly be denied that it is a dangerous one for the character of the head master.

In teaching, once more, we live constantly on the surface of ourselves. This is the invaluable but dangerous power which those acquire who become "experienced"; the power of doing with only half of oneself things which seem to demand the whole. The bigger the personality the more the danger, for the greater is the amount of self that is left unused. We use results of thought without having to think; we live on the capital of past endeavour without having to make the effort again; we speak kindly or harshly without feeling either affection or unkindness. The gain and the danger-point of the experienced teacher lies in the trustworthy automaton which gradually grows around him, to serve instead of the self enclosed.

It is this treble superficiality of our profession which constitutes the chief part of its danger to us. One general result of it is that as years go on we come to live in a sort of "silver age." Small beauties and small delicacies are brought to perfection; matters of little importance are a little over-elaborated; the emphasis and value shift, somewhat to the detriment of larger and less easily formulated things, and of factors in the background and under the surface. This comes out with surprising effect when the values themselves happen to differ a little from those which are common in the outer world. A teacher in an elementary school pointed out to me the harm of letting children become familiar with the words of the Bible—"It does so spoil their composition."

I shall try to illustrate more at large from what public opinion usually takes to be the heart and final essence of all our work—moral teaching and training.

(1). So far as direct "moral teaching" goes, to teach morals without knowing more than most of us know of moral philosophy is inevitably to deal with the surface of the subject. We shall tend to eclecticism; to the collecting of pretty, scrappy, silver-age ideals. If we inculcate special virtues, they must be virtues which have been formulated and classified, and put into the books—not the fundamental struggle of intellect and will to deal with a new situation in the concrete. Stories are a help, but we are tempted to get stories with a quotable moral, even if we do not quote it in so many words. Tragedy is baffling. I remember a Sunday school book in which an account of a traveller, imprisoned for years because he helped to pass on a letter in the cause of Italian freedom, was brought to the conclusion, "All this because he had meddled with matters which were no business of his."[1]

In moral training outside the formal lessons we have an equal tendency to belong to the silver age. We formulate ideals which are convenient to governors and easy to explain and to impose upon the governed, and we impose them with great technical precision and care. My quotations here shall come from the writings of a famous head-mistress of secondary schools, who has taught and written much that is good.

"The most astonishing thing to me, in all my experience of education, is . . . how many children, even religious ones, imagine that a duty is merely 'something which had better be done, but it doesn't much matter if it isn't.'"

I hope that no one will misunderstand me if I suggest that this phrase is often an exact description of what some particular duty is, and that the recognition of its truth is an important part of sane moral development. May I support my suggestion by quoting special cases given by the writer?

"Teach him that to get up when called is a definite duty, the breach of which must be confessed and repented of."

"Let us teach her to observe absolute silence at certain times and places, and to feel that breaking it, even to say something harmless, is wrong, not in itself (we should never manufacture crimes), but as showing a want of self-control; as being a choice of what is pleasant, instead of what is right."

A third quotation seems to me to suggest something still more seriously "unreal":—

"We all find certain kinds of work easy and pleasant on one day, and other kinds on another: and to an elder person I should say, consult this feeling, and do not waste time and energy in forcing yourself to do to-day what you will do twice as well, and with ease and pleasure, to-morrow. But, from fourteen to seventeen, girls should be 'under the law,' and learn to consider it a disgraceful want of self-control not to carry out the regular routine heartily, whether or no it may fall in with their fancies. . . . Girls should make it a point of honour never to be beaten by their own moods. It is quite true that they will *learn* faster and better by consulting those same moods to a reasonable extent, but learning is not the object from fourteen to seventeen. The grand object during these years is the formation of character; and it is more important to learn intellectual self-control at that age than to be a little more forward in any particular study."

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[1] A German writer some time ago gave the following rules for the construction of a tragic plot: "The poet selects a moral doctrine, which he desires to impress upon his readers in a sensuous form. For this purpose, he devises the general framework of the story, such as to exhibit the truth of the doctrine. Then he searches in history for famous persons to whom incidents have occurred somewhar similar to those of his story, and borrows their names for the personages of his plot in order to give them distinction." (Gottschied, *Kritische Dichtkunst*, quoted by Bosanquet, *History of Æsthetics*, p. 213.) "I imagine this is the way in which a poet does *not* set out to write a tragedy, but it is exactly the way in which a teacher in training sets out to construct a moral lesson."

I urge that the teacher who followed this doctrine, except in a sense most carefully qualified, would be building up a serious hindrance to what we most wish to train—the intelligent response of judgment and will to a complex situation. What is intellectual self-control, if it does not cover this, but an accomplishment as pretty and as artificial as the minuet?

(2). To deal with persons "for their good" when we do not love them involves a constant tendency to deal only with the surface of the persons themselves. Such dealing takes many forms. It may take the form of cruelty, as when a master in my hearing asked a class of small boys what they would do if left alone with a basket of strawberries, and then held up to their moral contempt the one who was naïve enough to answer truthfully. The boy was used as a means to the success of the master's lesson; or, to put it in the most favourable light, as a means to his own improvement. The professional teacher is not the worst sinner in such ways—one has heard parents take brutal advantage of a child's truthfulness. But parents have the love which makes partial amends. Dealing with the surface takes more commonly the form of professional kindness, and may be detected and resented as such. We share the dangers of the mission priest, charged with being "interested in you only so long as you are a 'case.'" A young woman of my acquaintance has complained to me, "I don't want a hostess who tries to make me happy; I want one who is glad to see me." The difficulty is that we must so often try to make our pupils happy, and we cannot always be glad to see them.

(3). Professional kindness, whether it stays on the surface of the pupils or not, stays on the surface of ourselves. Not our heart acts, but the useful automaton which has grown up around it. The automaton may succeed by obtaining and using a real human response from the person with whom it deals. It is unlikely that it often succeeds so well or so universally as some teachers believe. Another Sunday school story in my memory represents the naughty child as confessing, "You can't behave badly with a person who calls you 'dear.'" But, undeniably, it succeeds to some extent, and, inevitably, we use it to that extent. We use, and must use, the child's affection in the way of business. It is all right for the child, but the teacher who leads by love (by the pupil's love) must face the dangers to character which belong to the professional favourite.

Still other ways are there of filling with half oneself the place which looks as if it demanded the whole. Besides being the professional favourite, the teacher finds himself often in the position of professional saint. We get into queer involved positions of "setting an example;" of doing things not because we believe in them, but in order that somebody-else-who-looks-up-to-us-and-to-whom-they-might-possibly-do-good may still go on doing them, or for fear we should lose our influence with somebody-else-who-may-not-do-them-himself-but-who-would-probably-think-that-we-ought-to-do-them. Or, even if we can keep clear of involved positions, we are still, or feel that we ought to be, objects of some reverence for those whom we guide. Probably we usually are not; but there are some unwholesome mists in the air round even an imaginary pedestal. Again, besides being professional saints, we are popular preachers. A friend of mine trembles to think how well she can stir a class to enthusiasm over Joan of Arc, while thinking herself all the time of something else. We rouse the emotions of others whilst our own remain unstirred; or, more dangerously still, we rouse our own emotions without guiding them as we guide those of others to outlet in action. We can live upon capital in morals as in intellect, and, for a time, can guide the young in noble paths while we sit and rest ourselves. We become fluent morally, and some day we may become cheap. In the intricate problem of teaching and training, we should not lose sight of a factor which is not always discussed—the effect of moral teaching on the moral teacher.

From this somewhat gloomy subject let us turn to think of possible safeguards against the dangers of this dangerous trade.

The greater part of these dangers, I have tried to suggest, comes from the treble superficiality of the teaching profession. Teaching, taken at any ordinary level, by an ordinary person other than one of the rare artist-teachers, fails after a while to compel or allow that person to put forth all of himself; it cannot "absorb" him. It shares this incapacity with every ordinary trade and business, but it seems not to confess it so frankly as they. Its dignity seems to make it claim to be the central and sufficient channel of our life, yet, except for a few of us, it is not permanently absorbing enough to draw all our life into it. Safeguards, then, are needed, for the inability to put oneself forth is the heart of all danger. There are two obvious resources—to deepen and widen the channel of our professional work so that it may absorb more; or, instead or in addition, to set up rival channels to take up that life which must turn bitter if it is not poured forth.

The first plan is followed by all those teachers who enlarge their profession by studying the subjects they teach, or by working at method and organization, or by working for the pupils themselves, becoming "master" as well as "teacher," and adding the offices of elder brother or sister, and priest and counsellor and playmate. Often, plainly, this is the right way out. Our profession is not enough of a trade to enable us to profit by treating it simply as a trade. The teacher in an elementary school who tries to "forget all about the class after work is done," and the secondary teacher who will not go to tea with parents for fear they should wish to talk about their children, and the college teacher who refuses to live in a students' hostel "because you would never get away from them," are sometimes certainly on the wrong lines. The fear and hatred of the crowd of faces is the effect of a certain distance. Since we cannot go further off, it may be even egoistically wise to come nearer, and we may find that a few faces focussed transform the aspect of the whole. "My friends and their friends" are very different from "that lot of people."

This deepening of the professional channel is often one remedy needed for our dangers, but it is not always a sufficient remedy, and one cannot even say with certainty beforehand that it is a proper remedy for all. Quite as many teachers are in need of rival channels as are in need of deepening the central one. Even the religious "teaching orders" must hold fast to religion as well as to teaching. Outside such orders, we must seek other interests and other work to drain our lives, that teaching itself may benefit.[1]

Above all we, more than any other class, must keep or create a channel of human intercourse. If we have not families, then, within or without the profession, we must have friends. We know too many people without knowing them intimately; we must know some intimately and be known by them. Too many people are our subordinates or our polite acquaintances; we must have one or two who are close equals. Friendship taken on a low level, of course, is no safeguard against anything, but on a high level its opportunities and its discipline are remedies for some of the greatest dangers of our trade. If we can become persons worthy to make friendships and able to sustain them, we may be worthy and able to be teachers; and we may be able at the end, thinking over our friends, to say with St. Teresa, "Under GOD, I owe it to such persons as these that I am not in hell."

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[1] A former pupil of mine, of many gifts, has just written to tell me ecstatically how much more zeal she can give to teaching now that her spare moments are given to writing a novel.

METHOD IN TEACHING.

By T. RAYMONT, M.A., Vice-President of Goldsmith's College.

TWELVE months ago there appeared in this Journal a paper from the pen of Prof. Findlay, intended to open up a discussion on the subject of "Method in Teaching." The subject seemed to me a promising one, and I awaited with interest the next contribution to the discussion. This expectation not having been realized, I accede to the Editor's request that I should offer some remarks upon the problem propounded by Prof. Findlay. I do so, not because I imagine myself to have any special message to deliver, but because it would seem to me unfortunate if the matter were allowed to drop.

To begin with, some attention to the use of terms is, I think, of considerable importance. The term Method should be used in educational theory, as it is used in logic, to stand for the right arrangement of thoughts, when the discovery or exposition of truth is the object aimed at. Arrangement I take to be the very soul of Method. Certain other things that the teacher has to think of—questioning, narration, illustration, &c.—are best marked off as Modes of Instruction or Devices of Teaching. I should not admit Prof. Findlay's term Devices of Method, because I wish expressly to reserve the term Method for those "large and broad principles" which he speaks of. For the same reason I think that Messrs. Green and Birchenough, in their excellent "Primer," make an inconvenient extension of the term Method when they write as follows:—"When we ask such questions as, How am I to arrange the subject-matter so as to make the strongest possible appeal to the children? Must I tell or must the children find out? What use must I make of narrative, of description, of illustration? . . . we are raising questions of method." Their first question *is* a question of Method; the rest are not, unless we are to revert to a time when there were an elliptical, a heuristical, a dokimastical, and an acroamatical[1] "method." If the authors have used the term Method correctly, they might well have called their book a Primer of School Method, as educational writers of a former generation used to do. The title actually chosen, "A Primer of Teaching Practice," is far better.

Prof. Findlay sees a difficulty in distinguishing between Material and Method. I confess I do not quite understand his difficulty. The "what?" and the "how?" seem to me distinct enough. The cause of his difficulty is perhaps revealed a couple of lines further on when he speaks of Curriculum and Method as if he had merely repeated the words Material and Method. But the word Curriculum, cognate with the word Course, introduces an idea which the word Material does not connote. A full-blown Curriculum involves the idea, not only of Material, but of *graded* Material; it involves, that is to say, arrangement—Method. No wonder, then, that Curriculum and Method are thought to overlap.

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[1] All these terms, and some others equally ungainly, were used in (e.g.) a once popular Manual of Method by the Rev. W. Ross, in his time an Inspector of Church Schools. The terms were pretty obviously made in Germany. The book was, in its way, an excellent one.

I trust I shall not at this point be accused of verbal hair-splitting. Here, at any rate, is an end of it. I wished only to define properly, as it seems to me, the limits of the discussion.

I pass over the part of Method to which reference has just been made, i.e., the manipulation of the material of instruction with a view to the making of what is commonly known as a syllabus of work. Let us suppose the syllabus made, and that we have abstracted from it a topic, an item, a part susceptible of being dealt with by "a piece of teaching." Has a sound educational theory anything to tell us, and our students through us, of an arrangement of material, a succession of stages, by which *any* such piece of teaching should be accomplished?

Twenty years ago the answer would have leapt to the lips of almost any progressive trainer of teachers—"Why, of course. What about the five formal steps?" And curious instances might be gleaned from the pedagogic literature of that time of brave attempts to force any sort of lesson-material (e.g., the art of trimming a hat) into the "Herbartian" mould. That little system, which arrived on our shores from Germany *via* America, has had its day, though one cannot take the sanguine view that it has entirely ceased to be. What was wrong with it? Prof. Findlay quotes Dewey's opinion that Herbart's pedagogy was "a schoolmaster's pedagogy," and failed to interpret the actual life of the child.[1] Perhaps Dr. Kerschensteiner, of Munich, helps us still more when he says: "It is singularly noticeable in Germany that whenever the school is asked to undertake a new departure, whether intellectual or moral, the schoolmaster immediately sets about his work with *oral instruction*," and he thinks this all-sufficient. The Herbartian pedagogy, as exemplified in the formal steps, is a schoolmaster's pedagogy, at any rate in the sense that it is a pedagogy of "chalk and talk," usually requiring, on the pupil's part, the somewhat passive reception of an ordered array of ideas set forth in the "presentation" stage. It may be added that the formal steps lent themselves with ease to the perpetuation of one of the worse faults in the traditional procedure of the training college; for our usual machinery of "criticism lessons" and "demonstration lessons" tends directly to inculcate the notion that unless "chalk and talk" are freely expended, no work is being done. These exercises tend to make us forget that one of the supreme tests of a good teacher is that he can keep his class quietly and happily at work on their own account, and without his overt activity at every moment of the day.

If I remember rightly, it was Prof. Findlay who first showed English teachers that at least we must distinguish between lessons involving the assimilation of ideas, and those involving the acquisition of skill. My own treatment followed his, except that I drew clearly what seemed to me the very important distinction between method and devices.[2] Prof. Welton went further, and distinguished four types of lessons, each with its own appropriate "steps of method."[3] And there the matter seems to stand for the present, so far as English textbooks are concerned.

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[1] *Principles of Class Teaching* (1902).
[2] *Principles of Education* (1904).
[3] *Principles of Teaching* (1906).

But what is to be the future of this part of the doctrine of Method? For one thing, there must be, as Dewey has implied in the extract quoted above, a shifting of emphasis. Two books bearing closely on the subject have recently been produced in prolific America. Upon their respective merits it would be irrelevant to express an opinion here, but their titles are significant in the present connexion—Dr. Strayer on "The *Teaching* Process" and Prof. Colvin on "The *Learning* Process." The latter is the more promising title; for if teaching means causing to learn, we must inquire more closely how children learn different things; how we ourselves learned the things that have become part of us—the truths that we really know and are able to apply, and the literature that we really love and live by; how also we learned the things that we are conscious of never having properly grasped or appreciated.

Further, we need to look with suspicion upon all general formulæ of methodical procedure in teaching, whether the "formal steps" or any ingenious modifications of them. We speak familiarly and truly of a special method for mathematics and a special method for literature, and so on. But may there not be, though, of course, in a more restricted sense, a special method for "Young Lochinvar," and a special method for the "Ode to Duty"? Let anyone who has tried to teach both tell us whether he would care to commit himself to any quite definite rules of procedure, "steps of method," which would apply equally in the two cases. Prof. Findlay rightly pleads for "rule and law." But are they attainable in the sense he appears to mean? And even if they were attainable, would it be expedient to introduce them to the notice of students, at any rate until quite late in the course of training? To a student, as to other people both younger and older than students, a general rule prematurely laid down is apt to prove a strait jacket. The one rule I would enjoin betimes is that there should be what the Herbartians call a "statement of aim," which means only that the student should be quite clear as to what he wants to teach—an obviously innocuous generality.

Beyond this, it might well be held, I think, that rules are fraught with danger to the young student, because of the infinite variety of the material he may be called upon to manipulate. And why, by the way, should Prof. Findlay scoff at "freedom, variety, and elasticity"? Surely these are as good in their way as "rule and law." For freedom need not, and should not, mean freedom to set at naught the psychological requirements of the individual case. Instead of elaborating rules of method for general guidance, I would in the first instance ask a student to use his common sense in developing the "steps" of his lessons, on the understanding that a false sequence must be mercilessly though (let us hope) kindly criticized, carefully rectified, and referred to the appropriate psychological principle. Then at a comparatively late period in the course of training, I would discuss the general question whether, and in what sense, there are any rules of method of wide applicability. This is surely the true pedagogic order. Such a discussion would then appear as an interesting psychological problem, arising, as all such problems ought to arise, out of the student's experience in the schoolroom.

THE TEACHING OF ENGLISH.

II. Literature.

(What Boys and Girls Read.)

By J. A. GREEN, M.A., Professor of Education, The University, Sheffield.

In a previous article (Vol. I, No. 3), certain criticisms of current ideas concerning the Teaching of Grammar and Composition were advanced. They raised some fundamental issues which it is proposed to deal with more fully at a later date. In the meantime there are other aspects of the question of the teaching of English in the schools which are admittedly not in a satisfactory position, particularly the question of the teaching of Literature.

The problem of aim and method in this regard is not an easy one to solve—so far, at any rate, as the schools are concerned. Professor Raleigh has even gone so far as to say that we can no more *teach* boys to like Literature than we can *teach* them to fall in love. The analogy he employs suggests, however, that the love of literature will in the nature of things come to all at some time or other, given the requisite literary environment. Whether this is so or not depends perhaps on what is meant by the love of literature. We do not suppose that the young lady who has no particular aim in life, and who saves herself from the boredom of an inane existence by taking refuge in books, would, in Professor Raleigh's sense, be called a lover of literature. Her friends call her a great reader, and she admittedly devours the latest novels almost as fast as Mudie or Smith or Boots can supply them. She has, most probably, been educated in a school "other than elementary," and her course has included the usual literary masterpieces, culminating in one or two of Shakespeare's plays, the end of which is, she becomes a novel reader pure and simple. The case of her brother, whose more strenuous life affords less leisure time, is commonly not very much better. His literary sense is satisfied by his newspaper, the monthly magazines, and the novel for Sundays. The rank and file of those whose formal education ends at eighteen or earlier do not show, in the use they make of their time, that their school introduction to literature has had any very obvious effect upon their reading habits. Such at least is the impression one gets in ordinary intercourse, and the impression is supported and emphasized by the ordinary library statistics, whether public or private.

In the nature of the case, it is not easy to get first-hand information from this particular class of reader. Speaking broadly, it is probably within the mark to say that less than twenty-five per cent of those who have enjoyed a Secondary School education have developed any sign of that love of literature, which so distinguished an authority as Sir Walter Raleigh says we cannot teach. The assumption is that to love literature means a conscious appreciation of a form of art. That is to say, we suppose the distinction which applies to the case of music also applies to books. As against the thousands who enjoy the rollicking pantomime song, or the sentimental airs which fill the drawing room musical cabinet, there are the tens who love Wagner, Beethoven, Chopin, and all true artists in the world of music. We should not describe the former class as lovers of music, nor should we call the novel reader as such, a lover of literature.

Some no doubt will say that the difference in the case of music is due to a defective musical education, but, for the mass of men, the education required to produce a genuine appreciation of great works of art is not easily obtainable, and the desire for it within themselves is not strong enough to lead them over the difficulties and sacrifices that lie in their path. The improvement of school music may do something for them, but will it not require much more than this to make them put the right values on the musical trash which abounds?

Is this perhaps not also true of Literature? The position in regard to Music may be lamentable, but the difficulties are very great. Music is all or nothing—there is no middle way. In the case of books, however, they may make an appeal which is not the appeal of the artist, but is nevertheless a thoroughly worthy one. May this appeal not be worth more consideration in trying to solve the problem of English in the schools?

In any case it is worth while considering what the actual effect of our present method of approach to the problem is. Some literature is "taught" in all our schools, and many teachers, even in the elementary schools, spend much time and thought on the question of ways and means. With what sort of result?

Partly in the hope of answering this question, and partly with the idea of finding the nature of the material which they had actually to work upon in their English lessons, a number of teachers in Evening Schools were invited to find out from their pupils how much time they spent in reading, what they usually read, and why they read. No precise directions were given, as the responses were not required for statistical purposes, and the teachers who were good enough to help, pursued each their own methods. Some of them collected their results and gave me their summaries, others brought in the actual scripts of the pupils. The schools concerned were scattered over the West Riding of Yorkshire, and though the number was not large, they were situated in typical and varying districts.

In general, the teachers found that much more time was spent in reading than they had suspected. A large number of the boys said they actually spent twelve or more hours a week in this way. I have before me the records of a class of eleven, of whom five say they read 12, 15, 12, 24, and 18 hours a week respectively.

But the record of what is read proved less pleasing. The obvious motive was that of killing time. Where Libraries exist, reading is a cheaper form of amusement and excitement than Music Halls and Cinematographs. The local papers, particularly evening papers, receive a large amount of attention, mainly, one gathers, for football news and local gossip. After them, the favourite "literature" is *Comic Cuts*, *Lots o' Fun*, *The Jester*, with a sprinkling of *Tit-Bits*, *Answers*, *Home Notes* (amongst the girls), and various monthly magazines—*Strand*, *Royal*, *Windsor*, and the like.

Amongst books, setting aside those which have been in the programme of the Evening Schools, the same motive rules the selection.

But the lists and comments given by the pupils themselves are more informing than descriptive summaries. It is impossible to print them all. There are altogether 143 individual returns from boys. Of these, 9 either read nothing at all, or the daily paper only (Class A). 108 read the newspapers, weekly papers of the recreative type, and stories of various kinds (Class B). 27 show some sign of purpose in their reading (Class C). I give below a number of typical returns from each class.

CLASS A.

1. Sunday, ½ hour given to *Sunday Chronicle*, 2 hours, *Fun and Fiction*. Tuesday, 20 minutes, *Clarion*. Wednesday, 10 minutes, *Wakefield Express*. Saturday, 15 minutes, *Dewsbury Reporter*.
2. Gives 5 hours a week to *Leeds Mercury*, *Yorkshire Evening News*, *Reporter, and Umpire*.
3. "Some nights read the *Evening Post*, no longer than half an hour. I do not read anything more."
4. "I have not much time to read anything because I start soon in the morning and work late at night, and where I work they are very busy that we cannot get through the work. Then we have orders up for the custermer and then we have them to take where they have to go."

CLASS B.

This is by far the most numerous class, and may be taken as typical of the ordinary Evening School pupil in this part of England. At the risk of boring my readers I am giving a numerous selection. It is thoroughly representative, and its cumulative effect is perhaps essential. Spelling and the like are usually unaltered. Marks of illiteracy are even more frequent than appears. When the boys' return is summarized, they are usually deleted. But after all, illiteracy which is only formal matters very little. Of this more will be said later.

1. Time spent in Reading: Sunday, 4 hours, Monday, 0, Tuesday, 2 hours, Wednesday, 0, Thursday, 0, Friday, 1 hour, Saturday, 0. Total, 7 hours. What I read: *Yorkshire Evening News*, *Dewsbury Reporter*, *Comic Cuts*, Novels of Adventure, *News of the World*, Historical Novels, and I look at the Magazines when I go to the Reading Room.
2. Tuesday, ¾ hour, *Comic Cuts*; Saturday, ½ hour, *Dewsbury Reporter*.
3. Sunday, ½ hour, *Sunday Stories*; Tuesday, ¾ hour, *Evening News*; Wednesday, ¼ hour for *Butterfly*; Saturday, 5 mins. for *Comic Cuts*.

4. 2 hours a week on *Echo, Evening News, Sunday Chronicle, Boys' Own Paper.*
5. Sunday, 3 hours, Friday, 2 hours, rest of week, ½ hour; *News of the World, Boys' Friend, Leeds Mercury, Jester.*
6. The Books I have read and Papers; *Robin Hood, Chips,* and all comic papers, *Evening News.* I read twenty hours a week.
7. Reads *(omitting distribution),* 6 hours 15 mins. a week. *Yorkshire Post, Reporter, Butterfly, Boys' Friend Libraries, School Tales.* Is a member of the Public Library. Favourite Authors: Stables, Reid, Reed, Howe, Cobb, Hecter (?), Dickens, Adams, Scott.
8. Reads 3 hours 40 mins. a week; *Adventure, Answers, School Tales.*
9. Reads 10½ hours a week; Bible,[1] *Sunday Chronicle, Evening News, Boys' Realm, Sports Library, Boys' Friend, Reporter, District News, Weekly Record.* (Third year in Evening School.)
10. Reads 9 hours a week. Books only mentioned; *Scottish Chiefs, Hereward the Wake, Tale of Two Cities, At the point of the Bayonet, Through Three Campaigns, My Sword my Fortune.* (Third year in Evening School.)
11. Reads 13 hours a week (2 hours a day, 1 hour Saturday); *Daily News, Evening Post, Boys' Friend, Jester, Boys' Realm, Sports Library,* The Bible. (Third year in Evening School.)
12. Reads 14½ hours a week (?) (5 hours Sunday, 6 hours Saturday); Evening Papers, *The Wars of Red Roses,* Bible in Sunday School Class.
13. Reads 7¼ hours; Various Newspapers, *Answers, Family Journal, Horner's Weekly,* Bible.
14. Reads 24 hours a week! Comic Papers, *Gem,* and various Books, including *The Doctor's Double, Dick Turpin's Marvel, The Pace that Kills, Pickwick Papers,* and *Henry Esmond.*
15. Reads 25 hours a week; Weekly Papers *(Union Jack, Marvel, Gem, Dick Turpin, Sunday Dispatch,* Comic Papers), and stories.
17. Reads about ½ hour a day; Weekly Papers *(Reynolds' Newspaper, Answers, Pearson's Weekly, Ideas, Sunday Companion, &c.),* some stories, and *Artic Explories.*
18. Reads about 1 hour every evening; Weekly Papers *(Reynolds', Sunday Chronicle, Chips, Comic Cuts, Merry and Bright),* some novels, *Stanley and Livingstone, Fights for Flag,* and *Hudson Bay.*
19. Reads 21 hours a week; Newspapers, *Fun and Fiction, Boys' Realm,* and stories.
20. Reads 20 hours a week; Daily Papers, Weekly Papers (*Umpire, Reporter, Football Echo,* Comics, *Boys' Realm*), and stories.
21. Reads 4¾ hours a week; Evening Paper, *Answers, Comic Cuts, Sports Echo, Tit-Bits, Treasure Island.*

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[1] In the few instances where the Bible is mentioned, it appears to refer to the Sunday School lesson.

22. Reads 13½ hours a week; Newspapers (Daily and Weekly), *Sunday Companion.*
23. Reads 17½ hours a week; *Fun and Fiction, Old Jack, On a Kopje Farm, Alone in London, Boys' Herald,* and other Weekly Papers.
24. Reads 8¼ hours a week; *Grimm's Fairy Tale Books, Post, Answers, Treasure's Island, Comic Cuts* (10 minutes), Magazines.
25. 6 hours 20 mins; *Reporter, Sports Echo, Boxing World, Weekly Post, John Bull, Weekly Telegraph.*
26. 5¾ hours; *Mercury, Answers, Story Journal, Football News, Reporter, Umpire, Reynolds', Evening News.* Is a member of Free Library.
27. 5½ hours; *Sports Echo, Loteries Weekly,* Comic Papers, Wilson's *Tales of the Borders, Robinson Crusoe, Treasure Island.*
28. 7½ hours; Newspapers and Library Books. Prefers School Tales.
29. 9 hours; Evening Paper, *Weekly Record, Chatterbox, Answers, Penny Pictorial, Penny Magazine, Treasure Island, Christmas Books.*
30. 16½ hours; Newspapers and stories (Henty, Baring Gould, Kingston).
31. 8¾ hours; Newspapers, *Strand Magazine, Sports Echo, London Magazine, Pearson's Magazine, Lot o' Fun* (5 mins.).
32. 9¼ hours; School Tales, Newspapers, *Answers, Chips,* &c. (20 mins.), *Sports Echo, Football News.*
33. 10 hours; Newspaper, *Comic Cuts,* Sunday School Prizes.
34. 8¼ hours; School Tales, Sunday School Books, *Young Soldier. Weekly Dispatch.*
35. 13½ hours; Newspapers, *Comic Cuts, Butterfly, Chips, Jester, Lot-of-Fun, Tit-Bits, Puck.*
36. 21½ hours; Newspapers (Daily and Weekly), *Fun and Fiction,* and School Stories.
37. 8½ hours; Newspapers (Evening and Weekly), Sunday School Prizes, and Books from Library.
38. "I read the *Evening News* half an hour every night, *The Jester* and *Reynolds' Newspaper* two hours on Saturday afternoons, the *News of the World* one hour on a Sunday afternoons."
39. "I read two or three papers a week. I read all the tales in *Chips.* I spent three hours on Friday night to finish reading *Comic Cuts, Chips, Favourite.* On Monday night I read the *Jester,* and spent an hour on it. I read *Fun and Fiction* on Tuesdays, and spend half an hour. On Saturday I spend half an hour on the *Express.* On Sunday I spend half an hour on the *Sunday Chronicle.*"
40. "Every night I read the *Evening Post.* I am now reading a tale called *East Lynne,* and a Book from the Library called *Ete.* I read the books from the Night School Library. I have other books which I read, named *Little Folks.* Sometimes I read Fairy Tales. I read about 28 hours a week (!)"

41. "I read the *Butterfly*, *Chips*, *Jester*, and *Comic Life*. On Saturdays I spend an hour reading them. I read the *Evening News* for about an hour in the evening and sometimes I read *Sunday Chronicle*; that is all I read."

42. *Magnet* (1½ hours), *Chips* (¾ hour), *Football Library* (½ hour), *Sports Echo* (2 hours), Weekly Newspaper (¼ hour), *Home Companion*, *Her Benny*, *Bravely Won*, *A Life on the Ocean Wave*. I spend about 28 hours a week reading (!)"

43. "*Chips*, *Gem*, *Magnet*, *Boys' Realm*, Evening and Weekly Newspapers, *From Log Cabin to White House* whenever I feel fit."

44. *Gem Library*, *Magnet Library*, *Horner's Weekly*, *Sunday Circle*, *Evening News*, *Tit-Bits*, *Sunday Companion*. I spend about 30 hours a week in reading the above."

45. *Comic Cuts* and *Chips*, about 3 hours a week.

46. "Nearly every Sunday afternoon I read the *Umpire* for half an hour. Some Saturdays I get the *Chips*, and it takes me half an hour."

47. "I read the *Chips*, *Fun and Fiction*, *Comic Life*, and *Butter-Fly*. I spend about 2 hours a week in reading them."

48. "*Uncle Tom's Cabin*, which I read generally, or *Pilgrim's Progress*. Also the *Daily Mirror*."

49. "I sometimes read the *Comic Cuts* and *Chips* on Wednesday about half an hour. Well, in fact, I don't read, I look at the pictures. I do fretwork most of my spare time."

50. 7¾ hours. Newspapers (Evening and Weekly), *The Scout*, and *The Boys' Best*.

51. "The amount of reading that I do during each week is about 4½ Hours. I read during my tea time as I have no other time, With me working at Hilton's Boot Shop. I have to get my tea there, and getting tea in a boot shop is rather dry (no matter what you have for it), so I read when getting tea. The paper that I read is *The Scout* the paper for Boys. Founded By Lt. Gen. Sir Robert Paden Powel K.C.B. It is a weekly paper and comes out every Thursday. It contains both School tales, Adventure Tales both Complete and Continued. It also contains each week, 'Things all boys should know, also an account written by some General, or person that has been in a tight corner in some war during his soldier life, and other items."

A considerable number of boys returned what they had actually read during the week previous to the inquiry. Typical replies were as under :—

52. Monday, 1 hour; Newspaper, *Kidnapped*. Tuesday, 1½ hours; *Cheer Boys Cheer*, *Kidnapped*. Wednesday, 2 hours; *Fun and Fiction*, Newspaper. Thursday, ½ hour; *Marvel* and *Comic Cuts*. Friday, 1 hour; Newspaper, *Red Letter*. Sunday, 1¾ hours; *Chips*, *Kidnapped*, *Red Letter*.

53. Read Newspapers only, about 2½ hours.
54. Read 6½ hours. Half this time given to *Tom Brown's School-days*. Rest to *Tit-Bits*, *Weekly Telegraph*, and *Boy's Own Paper*.
55. Read 7¼ hours; *Cloister on the Hearth*, *Love the Tyrant*, *Children's Magazine*, *Red Magazine*, *Football News*. "I am fond of reading Adventures, a few love tales and any kind of sport news. I have only 2½ hours a day spare time for reading only on Saturday then I spent my time in football in the afternoon and go to the dance at night. Sunday is courting day when I'm not at work."
56. Read 5 hours. *Tom Brown's School Days* took 3, rest of time given to *Football News* and Rotherham Mystery.
57. Read about 1½ hours. Newspaper mostly—also *Kidnapped* AND[1] Story Books.
58. Read about 6 hours. Newspaper chiefly. *Black Arrow* and *Kidnapped* (apparently at school).
59. About 2½ hours. Newspaper (Football and Murder), with doses of *Kidnapped*.
60. "I am fond of reading the *Star* and the *Lottomers Weekly*, there are many interesting bits in the *horners* such as 'How a man kept a wife and family on 15 shillings a week.'"
61. 6½ hours. "When I have nothing to do I especly like to read a short tale on some daring school boys or short tales of *Deerslayer* and Adventures."
62. 3½ hours. "My Hoby is painting and playing the cornet. Reading is a nice hoby to pass the time away."

CLASS C.

1. Sunday, 4 hours; Monday, 0; Tuesday, 3 hours; Wednesday, 30 mins.; Thursday, 10 mins.; Friday, 1 hour 10 mins.; Saturday, 0. Total, 8 hours 50 mins. "What I read: Daily Papers, *Jester*, Football Papers, Books of Adventure, History, Travel, also I like a good exciting story out of the penny dreadful but not a lot. I go to a reading room and I look at and read the *Graphic*, *Windsor*, *Strand*, and *Royal Magazines* and I am in the Public Library and my favourite author is G. A. Henty and Rider Haggard."
2. Newspaper, *Fur and Feather*, Books of Adventure. (Time not stated.) "The reason why I read the newspaper is because I like to hear how the houses of Parliament are going on. I also like to know how George Gray is going on with his marvellous Billiard Playing. The reason why I read the *Fur and Feather* is because I have a rabbit and some Bantam hens. I get a *fur and feather* every week it tells me how to feed them and keep them in good condition. I sometimes read Books of Adventure in these books there are some lovely little stories which makes me very interesting" [*sic*].

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[1] There is surely a good deal at the back of this word. *Kidnapped* is one of the School books. It is read as a task.

3. Books read during week. *Pitman's Shorthand Journal*, 1½ hours, *Answers*, 1 hour. *Dewsbury Reporter*, 1½ hours. *Evening Post* (Saturday), 30 min. Total 4½ hours.
4. "I spend about 3 hours a week in reading. I read Tales of Adventure, read over the Daily Papers, read poetry and facts about Inventors and Composers, and History of the English Sailors and Soldiers."
5. "Monday and Tuesday unable to read anything; Wednesday read Books on Health and Strength, can read about half a book and read the other half on Friday. Thursday occupied with Home Work. Saturday, pleasure interupts. Sunday, Long walks, cycling, and outdoor exercise.
6. "The following is an amount of reading I do in an average week. I am now reading or about to read the following: *The Cloister and the Hearth*, *Ivanoe.* As a general rule I purchase the *Boys' Best Paper*. If I have time I read various books upon history. Time per week will equal about 3 hours."
7. What I read and why I read: "Some of the following Newspapers, Weekly Periodicals, Books, and &c., which I read taking as my first the *Daily Mirror* which is a morning paper. The *Evening News Lloyds News* which is a Sunday paper my Weekly Periodicals are the *Pearson's Weekly Red Letter* and the books which I am reading at present are *Ivanhoe* which I am reading at the Evening School another is the *Mill of the Floss* and then I take a monthly Journal called *First Aid.*

   Why I read: I will take the *Daily Mirror* and the reason I read this paper is because I get the news of the South of England chiefly and which tells me more about the Royal Famely than any paper I can get."
8. Reads 7 hours 10 minutes a week. Weekly newspapers, *Amateur Gardener*, *Tit-Bits*, Novels of Adventure, School Tales.
9. Reads about 1¼ hours a day. *Evening News*, *Tit-Bits*, *Scarlet Pimpernel*, *Harmsworths Self-Educator.*
10. "What I read and why I read. The books and papers which I read are not an expensive sort, or very numerous, but all the same I can gain knowledge, pleasure, recreation, and if needs be, kill time as well from them. 1st. *Science and Art of Mining* is one of the papers I read and it is a very interesting paper on mining principles. 2nd. The Evening papers. 3rd. A weekly paper known as *The Skyrack.* 4th. And also a weekly journal of fiction not always read by me.

    Why I read. Why I read is easiest to explain by the papers. *Science and art* is full of useful information, and is read for the knowledge gained by it. It has many interesting subjects, and is a useful paper for the mining student to read. 2. The Evening paper I read for information of this worlds machinery, such as the doings in parliament, Political speeches of our great statesmen in different towns and on different subjects many of which are interesting at the present time and enables one to discuss the Gains or losses the workers will receive. Then there is the law court proceedings disclosing to me the crime fraud and misery in this country. crimes which equal any commited in the olden times are done in spite of our protection. Suicides committed through misery and starvation. This in one of the richest Countries of the world. I read the weekly *Skyrack* for its reports on the doings of our district councils and for the local news news contained therein, its notes on our local football clubs doings also local entertainments and amusements. This paper affords a certain amount of knowledge with pleasure combined. Books of fiction I read when I have nothing of more interest, and I want to pass an hour away, many of the fiction tales are very interesting and full of exciting incidents, sometimes one is apt to forget in his excitement that it is only fiction and should only be read as such."

In addition to class summaries made by teachers, there are thirty returns from individual girls in three different schools. They tell the same tale, except that they record longer list of stories which they have read.

"I spend about two hours each night, that is fourteen hours a week. I read *Dainty Novels* and *Woman's World*, those are the books that greatly interest me."

"I spend two hours a night in reading. Books read : *The Red Painted Box* (a murder), and *heaps of others*. *Christian* (a love story), *A Footprint in the Snow* (a murder). These are the kind of books which appeal to me."

It is unnecessary to reproduce the long lists of stories which are given by one set of girls. They all show the same attitude towards reading which is revealed in the other lists. It is sheer pastime, dissipation, if you will.

The teachers of eight other classes in other schools were good enough to summarize the results of their inquiry. With one exception they tell a very similar story of boys who find "the best paper is *Chips*, and like to look at Weary Willie and Tired Tim," or to read "the exciting stories in the *Jester*, such as *Harold Hood*, or the *Convict Earl*." They record a very small proportion of boys whose reading is allied to some practical interest—their daily work or their hobbies, and an equally small number who take pleasure in History, Travel, and the like.

What does all this suggest to the teacher of English ? It has been urged in discussion that the facts reveal lamentably bad work in the Elementary Schools, but is the ordinary product of the Secondary School very much better ? On the average, of course, the Secondary School boy has been brought up in more intelligent surroundings and he is superior to *Chips*, but it is only the *élite* amongst them who can be suspected of literary appreciation. More than one public schoolmaster has lamented the non-literary proclivities of his boys. "Unfortunately, too much of the reading in which the modern schoolboy indulges consists of a poor class type of magazine of short stories, together with semi-technical journals on motor cars, motor cycling, and æroplanes. I do not mind these publications as *hors d'œuvres* or savouries, but I object to their forming all the courses of a boy's intellectual meal."[1]

One is irresistibly reminded of Matthew Arnold's words: "We are often told that an era is opening in which we are to see multitudes of a common sort of reader, and masses of a common sort of literature; that such readers do not want and could not relish anything better than such literature, and that to provide it is becoming a vast and profitable industry."[2]

Mr. Ballard's interesting inquiry on *The Appreciation of Poetry*[3] is, from the point of view of our problem, not very convincing. He shows that in Elementary Schools and Training Colleges where a good deal of attention is given to English Literature, the pupils are more successful in selecting good poetry from bad than pupils in schools where Grammar occupies the time assigned to English, and he concludes that "a sound appreciation of English poetry is . . . at least partly the product of direct instruction." Something, of course, depends on what "sound appreciation" means. As he himself points out, the bulk of the reasons for selection refer to rhyme and rhythm. Where other reasons are quoted they are often coldly intellectual; they are, that is to say, very reminiscent of instruction.

Is it at all clear that these predominantly intellectual or formal judgments, which have been set up by instruction in the minds of the pupils, are the right basis for a sound appreciation of literary excellence? Is it at all certain that training of this kind will save boys and girls from the attractions of "the common sort of literature," the harvest of which has come in abundance? Is it at all certain that this is the way to ensure their *liking* such poetry as would satisfy Matthew Arnold's tests of worth?

These questions are difficult to answer. Scepticism in such a matter seems altogether too pessimistic, and yet it is impossible to avoid it completely. We may teach children and young Training College students the elements of certain "foot-rule" methods of appreciating poetry, and end by leaving them still surprised that poets should have taken so much trouble to say what they had to say under such self-imposed restrictions as rhyme and rhythm. At best a poem for them may be a *tour de force*, a composition, a clever arrangement of what the Board of Education has called "the loose material of words."

An excellent example of the right kind of appreciation is incidentally afforded by Mr. Ballard's study. It happens also to offer a good illustration of the difficulty of teaching true appreciation. One of his eight examples of verse, four good and four indifferent, is the *Requiem* of R. L. Stevenson.

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[1] *A Housemaster's Letters.* (Smith, Elder & Co., 1912.)

[2] Arnold's Introduction to *The English Poets*, edited by T. H. Ward (1880), republished as the opening essay of the first series of *Essays in Criticism* (1888).

[3] *The Journal of English Studies*, Vol. I, No. 2.

Under the wide and starry sky,
Dig the grave and let me lie.
Gladly did I live and gladly die,
And I lay me down with a will.

This be the verse you grave for me:
Here he lies where he hoped to be;
Home is the sailor, home from the sea,
And the hunter home from the hill.

Children who select this as the best do so "because it seems sad," "because it is beautiful in its simplicity and easily understood." One lad is cited who puts it *last* on his list, *because it seems so ludicrous*. From Mr. Ballard's standpoint this lad is a failure, and the other two are successes. Possibly he has had no teaching, and the others have had a great deal. But surely, of these three, he is the only one who applies the right sort of measure. Poetry is a "criticism of life," and to a healthy-minded boy, the poet's frame of mind is unintelligible, and his verses *are* ludicrous.

The whole problem seems to centre in a case of this kind. We ask children whether or not a particular poem appeals to them, and we look at their answers for *our* judgments. Unconsciously we impart the husk of those judgments, and breed insincerity. Our pupils say what they think they ought to say, that is, of course, what they believe we should like them to say. When they do stray into frank expression of their own attitudes, we say they have no literary appreciation, and if they have been acute enough to apply the rhythm and rhyme tests, or to talk vaguely about lines being "beautiful in their simplicity" or being "true to life," we fancy they have learned something of literary appreciation at our hands, when they have done nothing more than catch our phrases or learned how to count syllables, hear accents, and the like. Is it surprising that teachers so commonly lament the fact that their pupils straightway drop their literary masterpieces when they leave school, and take to mere pastime reading?[1]

But to go back to the Evening School pupils. Even a rapid perusal of these typical papers shows clearly that the great majority live in quite a different world from their teachers. Here are dwarfed little selves whose emotional life is bound up with local gossip, the excitement of football, and a humour so crude that their teachers find it difficult to see any fun whatsoever in it. School has broken down the narrow barriers of their day-to-day existence only in the rarest cases. They have never caught glimpses of a greater world, the pursuit of which might have enlarged the boundaries of their souls, and brought them into touch with the larger life which is around and about them, but of which, at present, they neither know nor care. Yet their real life bores them at times. At least, it is not full enough to give occupation for their leisure time. They sink into reading as a dissipation. Anything will do, if it will only carry them out of the world that is theirs. Fiction and Fun! Fun and Fiction! And what strange fiction it is![1] Wild adventure, impossible school stories, sentimental novels, the merest melodrama make up the main account. Let us further remember that the boys and girls in the Evening Schools are the pick of their class. For every boy in the schools, there are at least four outside. Is it not safe to assume that the reading records of the outsiders would be equally barren?

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[1] An article in the current number of the *Pedagogical Seminary*, "What High School Pupils read," affords fresh testimony on this score.

Clearly, the problem for the teacher of English in such a case must be approached in a much less academic manner than the English specialist has yet devised, if it is to be solved in at all a satisfactory way. Further, although the case in question now concerns the Evening School, the problem of the day schools, *mutatis mutandis*, is, at bottom, the same as here.

(To be continued.)

NOTES ON THE EXPERIMENTAL STUDY OF WRITING.

(From the Edinburgh Provincial College Pedagogical Laboratory.)

BY JAMES DREVER, M.A. (Edin.), B.Sc. (Lond.).

1.—A New Method of Registering Writing Pressure.

IN the experimental study of Writing, probably no investigation is so promising of important results as the investigation of writing pressure. We are in this case studying both the writing impulse itself, and the extent to which co-ordination of movement in response to the impulse is present, that is, the extent to which the hand obeys the impulse of the writer. For the registration of writing pressure several forms of apparatus have been employed, but all investigators hitherto seem to have aimed at registering the pressure on a writing surface from the surface itself. Goldscheider and Meumann both registered the pressure pneumatically by resting the writing plate on an air cushion, and tracing by means of a tambour and smoked surface the variations in pressure on the writing plate. Kräpelin's "Schriftwage" is constructed on a different principle. It rests on springs, and by means of an attached lever a direct tracing of the pressure curve on the smoked surface is obtained. Any method of this kind has obvious and serious disadvantages. Variations in pressure on the plate may not be variations in writing pressure at all, but variations in pressure at the wrist, or changes in the position of the wrist, or of the hand relatively to the wrist. Further, the apparatus is necessarily of such a kind that it is difficult to make extensive and satisfactory use of it in the case of children, to investigate writing pressure under approximately normal conditions.

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[1] The reader should note that almost without exception, when fiction of repute appears in the lists, it is the book actually being read in the school.

Being sensible of these disadvantages in the methods hitherto employed, and finding also that the cost of the necessary apparatus was for us practically prohibitive, we attempted to devise a simple apparatus, indicating writing pressure with sufficient accuracy, capable of being easily employed with children, "fool-proof," and comparatively cheap. We have succeeded in obtaining an apparatus which seems to satisfy all these requirements.

We have abandoned altogether the method of registering the pressure from the writing surface, and instead we register the pressure from the writing point. The apparatus is simply a pen or pencil holder. The pen or pencil is placed in a guiding tube, which does not hold it so tightly as to prevent its sliding easily up and down, but tightly enough to prevent its swaying from side to side. The top end of the pen or pencil is caught tightly in a short metal holding tube, which is attached to a rubber membrane. The component of the writing pressure along the axis of the pen or pencil acts, therefore, normally on this membrane, and is transmitted to a tambour and so registered on a smoked surface. In order to steady the movement of the membrane, to prevent its rupture, and to bring back the point to zero, directly the pressure is removed a light spiral spring is placed against the holding tube on the opposite side of the membrane.

The accompanying illustration (Fig. 1) shows the apparatus in use. A pen or pencil of appropriate length is placed in the holding tube, attached to the membrane, and the long guiding tube is then screwed into place. The point of pen or pencil just projects sufficiently to write easily at all pressures, but not sufficiently to allow of its being held by the fingers (from a half to three-quarters of an inch). The apparatus, after being connected up with the tambour, is placed in the hand of the subject, and he writes as he pleases, or according to directions,

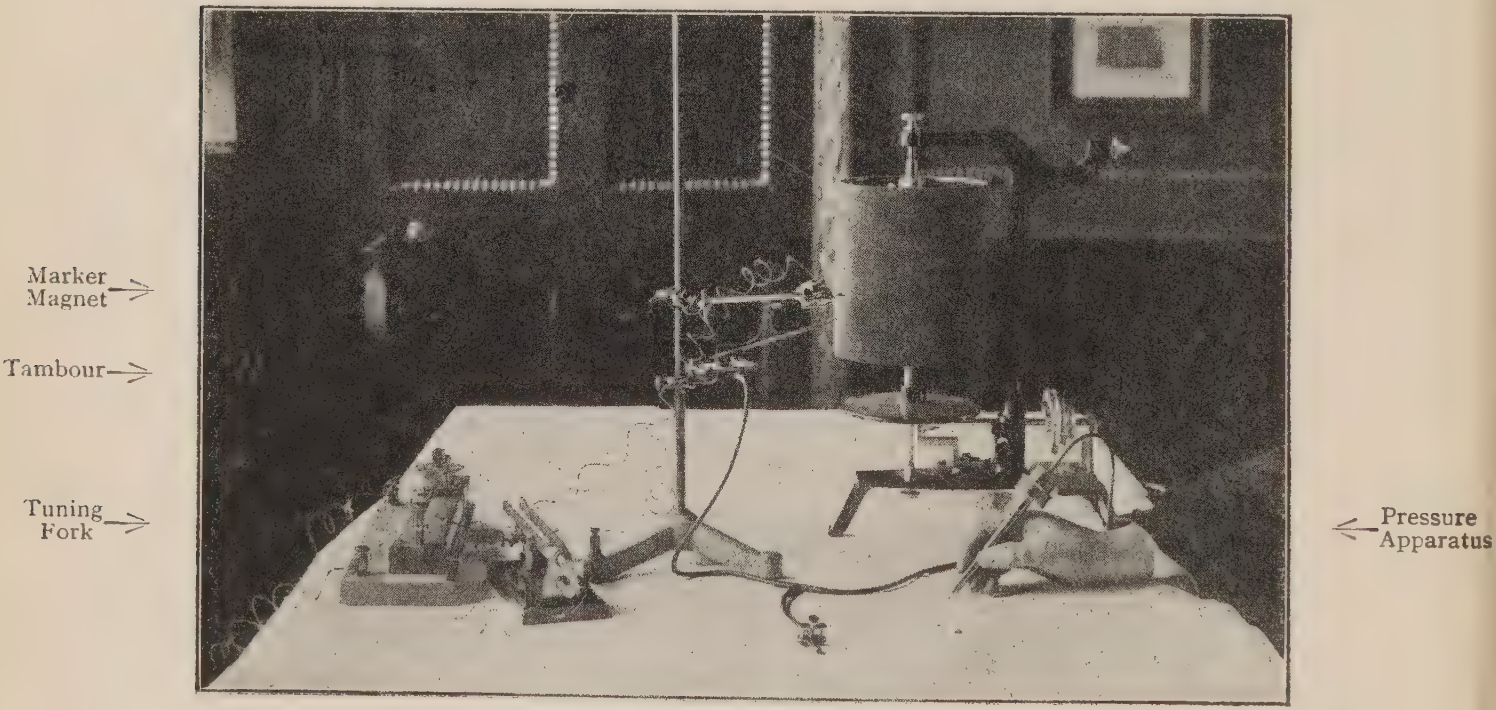

Fig. 1.

the pressure being recorded during the whole period of writing. If it is desired to study the writing time or the rhythm of the writing movements, a marker magnet may be attached, as shown in the fig., either above or below the tambour, as most convenient, connected up either to a tuning fork, for rapid writing and rapid movement of the smoked surface, or to a contact metronome, for slow writing as with children.

Fig. 2 will indicate the kind of tracings produced. All are taken with comparatively slow movement of the drum, but the movement is considerably faster in traces B and D (about double as fast), and the movement is also in the reverse direction, so that in A and C the curve runs from left to right, and in B and D from right to left. Traces A, B and C all represent the words "Moray House School," written with the pencil. Trace A is that of adult writing of the so-called "masculine" type, trace B of the writing of a boy of eleven, from a school where continuous writing is practised from the beginning (he was told to write the words as fast as possible), trace C of "copy-book" writing. Trace D represents the ordinary pencil writing of the words "That man hath perfect blessedness" by an adult female student, an exceedingly rapid writer (the whole time occupied was about 7½ seconds). It affords a fair specimen of the so-called "feminine" type. The tambour used in all the experiments was rather unresponsive. If it is thought desirable, the pressure can, of course, be expressed in grammes by resting the point of pen or pencil, held at the requisite angle, upon a spring balance,

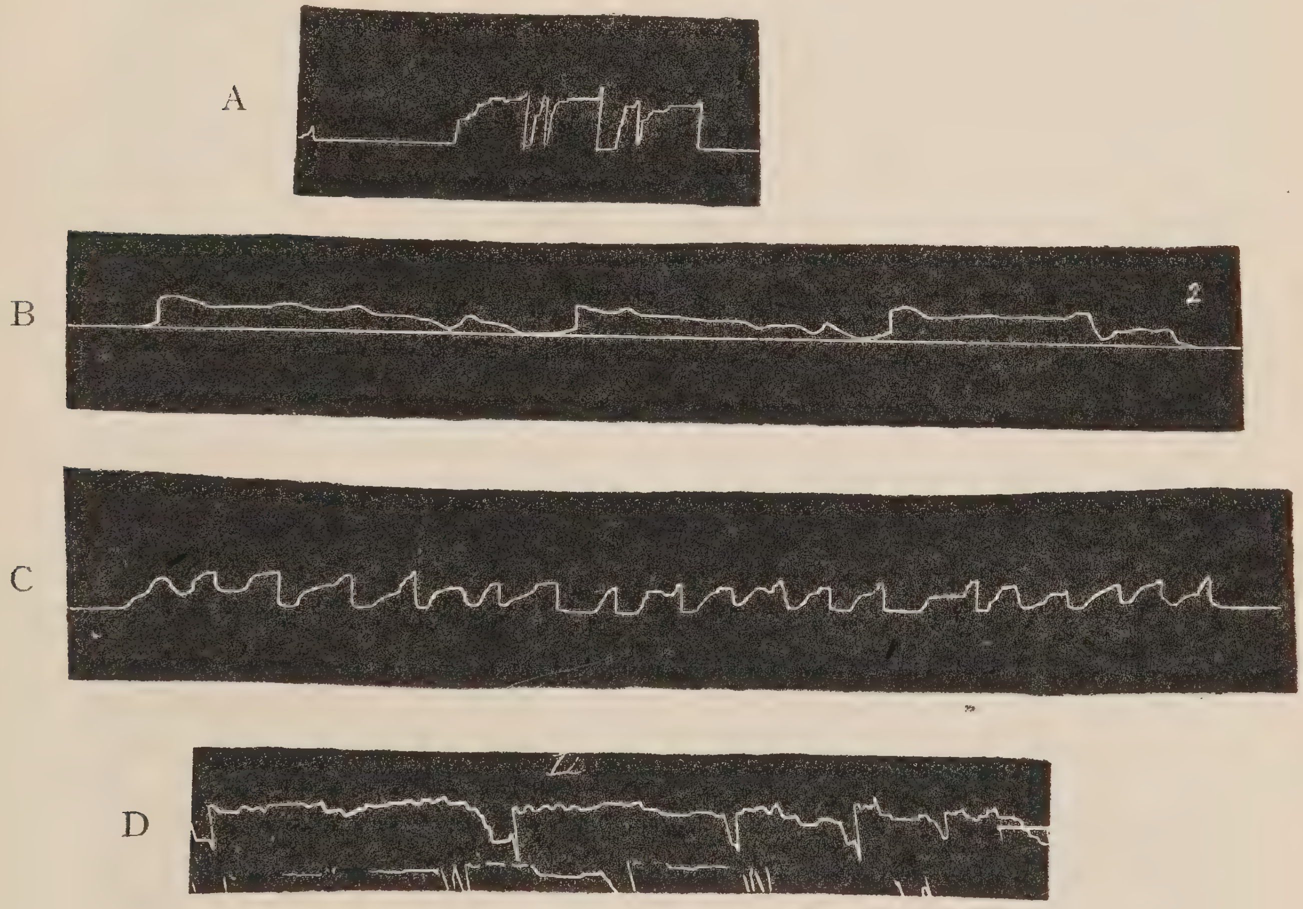

Fig. 2.

and reading off the pressure for maxima and minima of the curve, or for any point desired.

This simple apparatus, for which the name "cheirograph" might be suggested, can be produced by A. H. Baird, Lothian Street, Edinburgh, at a cost of 12/6. It is thus easily within the reach of the smallest pedagogical laboratory. Our first apparatus was constructed entirely of brass, but we found that this was somewhat top-heavy for use with children. The newest form of the apparatus, therefore, is made with an aluminium top, and to a great extent escapes this defect. There is another defect which it does not seem possible to remedy without very extensive modification of the apparatus. The recorded pressure will vary with the angle at which it is held, and this may vary, not only as between different individuals, but for the same individual in the process of writing. Hence, with this apparatus also variations of pressure may be recorded on the smoked surface which are not variations of writing pressure. In actual practice we have found the error due to this to be practically negligible, but it is well to remember that it may be present. In general, there is a tendency for the apparatus to rest firmly between forefinger and thumb, and for the change in angle therefore to be so slight that the effect of the change of the component along the axis of the pencil cannot be traced in the recorded curve.

II.—An Objective Measure of Merit or Value for Writing.

The only means of standardizing, that is, estimating the merit of different styles of Writing, which we possess at present, are those dependent on a scale of merit in Writing, constructed on the same lines as Thorndike's well-known scale. Now the fundamental objection to such a scale is that it can never be in any real sense objective, nor can its use by any individual give an objective determination of the merit or value of any specimen of Writing. The scale itself is not objective, because it is simply the average of a number of individual opinions of merit, a composite portrait of a number of subjective opinions, or a "blurred result," to use Dr. Myers' significant expression. The use of the scale by any individual teacher or investigator is vitiated through and through by individual opinion. We may doubtless get reasonably good results by using a scale of such a kind, as compared with the results which would be got by estimating handwriting without a scale of any kind, but the whole idea is scientifically unsatisfactory. Yet the matter is one of some importance, and it seems worth while to inquire into the conditions which an objective standard of writing value must satisfy, and whether we may not be able to take a few steps at any rate towards the fulfilling of these conditions.

A second serious objection against the Thorndike scale, which is at the same time an objection against the usual methods of estimating the merit of handwriting in the past, will bring into view the chief factors involved in our problem. It has been customary to regard handwriting merely from the point of view of the result, and consequently two main characteristics have been made the basis of our evaluation, viz., legibility, and the beauty of form, or pleasingness to the eye. The objection is that this is a wrong basis. Handwriting has three main characteristics—facility in production, legibility, and pleasingness, as a produced result. But beauty of form is not an independent characteristic of Writing as such, and hence ought not to be a leading factor in determining its value at all, whereas it has usually been the predominant factor.

Writing is graphic language; it is not Drawing. Facility of production and facility of interpretation are its chief characteristics as Writing, and the sole characteristics which ought to be taken into account in evaluating it. Beauty of form is a function of these, except where Writing has ceased to be graphic language, and has become a kind of pictorial art. The idea of beauty of form as an independent characteristic of Writing is not only the cause of our failure to find a satisfactory system of estimating the value of handwriting, but has also done incalculable harm in the past in the teaching of Writing, by tending to make it an end in itself and by divorcing it from that with which it ought to be most closely associated, viz., Reading. Reading is the interpretation of graphic language in oral speech, as Writing is the graphic representation of oral speech. That Reading possesses beauty which is most expressive of meaning, but the beauty is inherent in the oral speech; that Writing should be regarded as possessing beauty which similarly best fulfils the functions of Writing.

We start, then, with the assumption that Writing must be estimated on the basis of the two characteristics—facility of production and legibility. It ought to be possible to measure both of these objectively; beauty of form can never be so measured. It might be noted, also, that there are really two problems of evaluation. These are the evaluation of different styles of Writing, and the determination of the merit of individual specimens of handwriting or of the writing ability of individual writers. The former seems to be the more important problem for education. We shall evidently be far on the road to the solution of these problems when we can give a numerical expression for facility of production, and for legibility, and determine the relation which ought to hold between these two characteristics in our final formula, which yields our measure of value or merit.

It is a comparatively easy matter to get a numerical expression for facility of production. We can express this in terms of the time taken to produce, which, by using a tuning-fork with the "cheirograph," can be measured with great accuracy for single letters, for groups of letters, for words, or for sentences. It is a little more difficult to get a satisfactory numerical expression for legibility, but it ought not to be impossible. The obvious method is to use the chronoscope, and determine the reading time for the material in question. Unfortunately, however, there are considerable individual differences in reading times. This difficulty can only be overcome by taking the mean of a fair number of individual determinations by practised observers. The most serious difficulty of all is to get the relation between these numerical expressions which will be the formula for determining writing value. Hardly any step can be taken in this direction until norms have been established, which can only be done, after a great deal of work, by several independent investigators, and under all conditions is available.

PROLEGOMENA TO ALGEBRA.

BY F. J. O. CODDINGTON, M.A., LL.B., Barrister-at-Law.
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THIS paper is addressed primarily to the Mathematical Lecturers in Training Colleges, and it is desired that their attention be directed to it. The less technical sections may possibly be of interest also to the philosophically inclined.

Strange as it may seem, there is, we believe, no elementary text-book on Algebra whose treatment of the fundamentals of the subject is at all satisfactory.

The method adopted in the text-books is founded on confusion, and breeds it, and however this may be condoned on the grounds of practical convenience where the child is in question, it can have no justification when the pupil is sufficiently mature to be able to grasp the correct procedure.

The reason, the only imaginable reason, why this correct procedure is almost unknown in the teaching world, is because it has to be dug out of somewhat advanced and highly technical treatises which the average lecturer has neither time nor patience to read.

The following paper purports to set out the first principles of Algebra with the utmost concision and simplicity attainable, and consists, with slight alterations, of a course of lectures delivered at intervals during the last three years to various pass classes at the Sheffield Training College.

Some of the work is new, but not much, the greater part being derived (by a kind of *smelting*) from ore quarried from Dr. Whitehead's "Universal Algebra" and Chrystal's "Algebra"[1]—recondite but auriferous mines of mathematics!

So if the matter be not fresh, the manner of presentation is: "Non nova sed nove" (to quote the College motto), and the assimilability of the matter as presented (though tabloidal!) is the ground of publication.

§1. SIGNS.

A sign is anything that refers to something else. There are three kinds of signs, viz.:—expressive, suggestive, and substitutive signs.

(*a*) EXPRESSIVE SIGNS, e.g., gestures, words. These are used in order to direct attention to what they refer to rather than to themselves.

Language consists of groups of expressive signs arranged so as to combine the meanings of the separate words in order to convey a whole meaning.

It follows that language, which purports to be coherent, has its formal side.

Thus, if I say "Many Bahaites is a Mithraist" you may reply either that the sentence could convey no meaning, or that the meaning would be imperfectly conveyed, because the sentence is ungrammatical.

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[1] Works of Bertrand Russell, Couturat, &c., have also been consulted.

Again, if I say "All Bahaites are Mithraists, but no Mithraist is a Bahaite" you may safely deny the truth of the assertion, because it contains incompatible statements and therefore is illogical.

And you can make these criticisms, as to logic or grammar, even if you do not know what a Bahaite or a Mithraist is.

(*b*) SUGGESTIVE SIGNS, e.g., a knot in a 'kerchief. These are unimportant for the present inquiry.

(*c*) SUBSTITUTIVE SIGNS, e.g., a five pound note. A substitutive sign is one which is used to replace for a time the thing to which it refers, so as to direct attention to itself rather than to that which it refers to and replaces.

So, in a game of cards, counters are frequently used in the place of coins to pay the forfeits during the game, and then at the end of the game money may be substituted.

Thus the difference between expressive and substitutive signs is that an expressive sign is an instrument for thinking about that to which it refers, while a substitutive sign is a means of *not* thinking about what it symbolizes.[1]

§2. THE MAKING OF ALGEBRAS.

An Algebra is *a machine for reasoning by means of written substitutive signs.*

In order that reasoning may be conducted by means of substitutive signs it is necessary that rules be given for the manipulation of those signs, e.g., $2 \times 3 = 6$; $a + b = b + a$.

It *may* be possible to reason about many different kinds of things by means of substitutive signs, and it would seem likely that reasoning about different kinds of things would lead to different systems of rules (or "laws") for the manipulation of the signs.

Such a *system of manipulation* is called an Algebra. In order to be able to make use of any sign we have to ask two questions:—

(*a*) What does it mean? i.e., For what kind of thing is it substituted?

(*b*) What laws does it have to obey?

That is to say, Algebraic signs have to be considered under their *significant* and *formal* aspects, and these two aspects can be separated in thought.

It is the failure to effect this separation which causes so much confusion in the minds of beginners.[2]

In order clearly to show the *formal* aspect of an Algebra (in separation from its significant aspect) we will consider (see §4) the rules of *an* Algebra without in the first place referring to the possible meanings of the symbols.

But we require a preliminary note:—

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[1] A large proportion of philosophy consists in the employment of language as if it were Algebra; a deliberate transportation of functions. Perhaps that is why the work of such men as, e.g., F. H. Bradley, is so unconvincing, even when for the moment incontrovertible.

[2] And of the writers of text-books.

§3. NOTE ON THE LAWS OF ANY ALGEBRA.

The laws of an Algebra must be:

(*a*) Sufficient in number for the satisfactory manipulation of the symbols.

And here notice that the old processes of manipulation frequently lead to the construction of new laws and these to fresh processes, and so the Algebra evolves.

(*b*) Not inconsistent with each other.

(α) Further, in all Algebras the sign "+" means that the things
[a and b, in a + b] are joined by the sign, and have to be con-
sidered together as one composite whole of the same kind[1] as its
(β) constituents; (β) and the sign "×" means that the things so
joined have to be combined to form some third thing (which may
or *may not* be of the same kind as its elements).

"+" and "×" therefore might be considered as symbolizing mechanical and chemical addition respectively.

(γ) The sign "=" means that the symbolic statement on one side of it may always be substituted for the symbolic statement on the other side, for the purposes of any algebraic manipulation.

(δ) All work is supposed to be done from left to right, as in reading.

Thus a × b, or ab, means "*start with a* and combine b with it, to form a third thing (in accordance with the meaning and rules of the Algebra in question)."

(ε) A bracket means that the work inside the bracket ought to be done before the bracket is removed.

§4. FORMAL RULES OF THIS ALGEBRA.

(see §2)

	Addition:	Multiplication:	
(1)	Commutative Law		
	$a + b = b + a$	$a \times b = b \times a$	
(2)	Associative Law		
	$a + (b + c) = (a + b) + c$	$a \times (b \times c) = (a \times b) \times c$	[see §3 (ε)]
	$= a + b + c$	$= a \times b \times c$	[see §3 (δ)]
(3)	Reiterative Law		
	$a + a = a$	$a \times a = a$	

(4) Distributive Law

$$a\,(b + c) = ab + ac$$ [see §3 (δ)]

(5) Law of Absorption

$$a + ab = a$$

With these laws, which are sufficient in number and are not mutually inconsistent, we shall find that we can manipulate the symbols satisfactorily, *although we do not know to what they refer.*

Examples:

(*a*) Prove that $(a + b)(c + d) = ac + ad + bc + bd$

---

[1] *Usually*, but quaere in quaternions, e.g., consider Sab + Vab.

(*b*) Prove that $(a + b)(b + c) = b + ca$

Let $h = a + b$ [§3, *a*]

Then $(a + b)(b + c) = h(b + c)$ [§3 (γ)]

$= hb + hc$ [Distributive Law §4 (4)]

$= bh + ch$ [Commutative Law §4 (1)]

$= b(a + b) + c(a + b)$ [§3, γ]

$= ba + bb + ca + cb$ [Distributive Law]

$= ba + b + ca + cb$ [Reiterative Law §4 (3)]

$= b + ca + cb$ [Commutative Law §4 (1)

$= b + ca$ and Law of Absorption §4 (5)]

(*c*) Prove that

$(a + b + c)(a + c + d) = a + c + bd$

(*d*) Prove that

$(a + b + c)(b + c + d)(c + d + a) = ab + bd + da + c$

§5. INTERPRETATIONS.

Now that we have dealt with the *formal* aspect of this Algebra, we go on to consider the *significant* aspect.

At least *three* different interpretations can be given to the symbols and operations employed in §4.

(*a*) FIRST INTERPRETATION OF THIS ALGEBRA. The Geographical Interpretation.

Example—

Let $a =$ Europe, $b =$ Russia, $c =$ the Arctic Circle. (Fig. 1)

Let $a + b =$ That part of the earth's surface included by the words "Europe and Russia." (Fig. 2)

[N.B.—Russia in Europe is only counted once.]

Let $ab =$ That part of the earth's surface which is common to Europe and Russia, i.e., $ab =$ Europe in Russia. (Fig. 3)

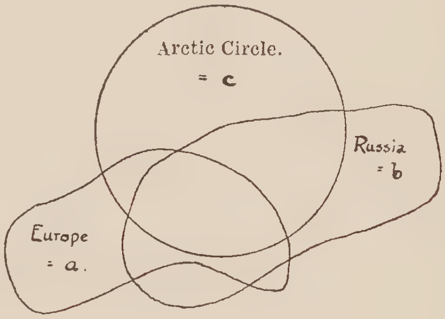

Fig 1.

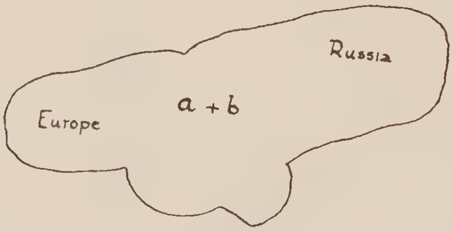

Fig. 2

Exercises—

(1) Show that with the above interpretation all the laws given in §4 hold good.

e.g., $a + a =$ Europe and Europe $=$ Europe $= a$

$aa =$ Europe in Europe $=$ Europe $= a$

(2) Show, by considering the interpretation *only*, that $(a + b)(b + c) = b + ac$

(3) Generalize the Geographical Interpretation.

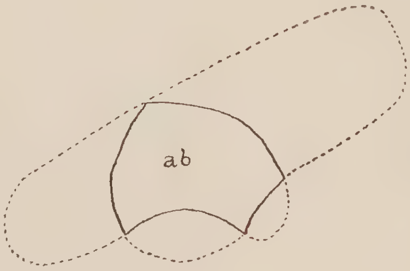

Fig 3

(β) SECOND INTERPRETATION. The Conceptual Interpretation.

Example—

Let a = all men (excluding women)
b = all the English (men, women, children, and suffragettes)
c = all people with blue eyes.
and let $a + b$ = "all men and all the English," as in the statement all men and all the English are liars

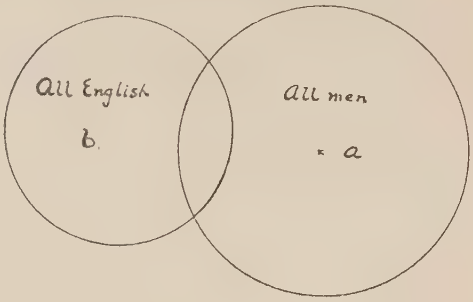

Fig. 4

let ab = "all men who are English," as in the statement all Englishmen are liars.

Generally let a and b stand for concepts; $a + b$ for the total area of denotation of a and b, and ab for the area of denotation common to a and b.

Exercises—

(1) Show that with the above interpretation all the laws given in §4 hold good.

e.g., $a + ab$ = all men and all Englishmen = all men = a

(2) Show, by considering the interpretation *only*, that $(a + b)(b + c) = b + ac$.

(γ) THIRD INTERPRETATION. The Propositional Interpretation.

Example—

Let a = It is raining
b = Smith is out walking
c = Brown has a pipe on.

and let "$a+b$" mean "One at least of the statements a or b is true."
i.e., "Either it is raining or Smith is out walking or Smith is out walking in the rain."

And let "ab" mean "Both the statements a and b are true."
i.e., "Smith is out walking in the rain."

Generally let a and b stand for propositions; $a + b$ for a statement of (at least) alternative truth, ab for a statement of conjunctive truth.

Exercises—

(1) Show that with the above interpretation all the laws given in §4 hold good.

e.g., $a(b + c)$ = It is raining *and* either Smith is out walking or Brown has a pipe on or both = Either Smith is out walking in the rain or Brown has a pipe on while it rains or both = $ab + ac$.

(2) Show, by considering the interpretation *only*, that $(a + b)(b + c) = b + ac$.

§6. The above Algebra, of which only enough for the purpose of this paper has been cited, is called the Algebra of *Symbolic Logic*.

It has been employed here in order to illustrate and emphasize the two aspects of Algebra, formal and significant—taken in that order for clarity of exposition.

We shall now deal with Ordinary Algebra in exactly the same way.

It will be noticed that the number of formal laws given here is greater than the number to be found elsewhere, and that there are *five* interpretations.

§7. FORMAL LAWS OF ORDINARY ALGEBRA.[*]

[*] Called by Hamilton “Scalar Algebra.”

	Addition :	Multiplication :
(1)	Commutative Law	
	$a + b = b + a$	$a \times b = b \times a$
(2)	Associative Law	
	$a + (b + c) = (a + b) + c$	$a \times (b \times c) = (a \times b) \times c$ [see §3(ϵ)]
	$= a + b + c$	$= a \times b \times c$ [see §3 (δ)]
(3)	Numerical Law	
	$a + a = 2a$	$a \times a = a^2$
(4)	The Law of Exclusion	
	If $a + x = b + x$	If $a \times x = b \times x$
	Then $a = b$	Then $a = b$

(5) Distributive Law

$$a(b + c) = ab + ac$$

NOTE.—For other laws and definitions see infra [§9, §13], and supra [§3].

§8. EXTENSIONS (*a*) Of the Commutative Law.
(*b*) Of the Distributive Law.

(*a*)	$a + b + c = b + a + c$	$a \times b \times c = b \times a \times c$
		[§3 (δ) and Commutative Law]
	$= b + (a + c)$	$= b \times (a \times c)$
		[Associative Law]
	$= b + (c + a)$	$= b \times (c \times a)$
		[Commutative Law]
	$= b + c + a$	$= b \times c \times a$
		[Associative Law]
	$= c + b + a$	$= c \times b \times a$ [By similar processes]
	$= a + c + b$	$= a \times c \times b$
	$= c + a + b$	$= c \times a \times b$

And generally, any number of “additions” can be performed in any order.

(*b*) If $E = (a + b)(c + d)$ put $(a + b) = k$ [3 (α)]

Then $E = k(c + d)$ [3 (γ)] $= kc + kd$ [Distributive Law]

$= ck + dk$ [Commutative Law]

$= c(a + b) + d(a + b)$ [3 (γ)]

$= ca + cb + da + db$ [Distributive Law]

And generally

$$(a+b+c+\ldots)(A+B+C+\ldots) = aA+aB+aC+\ldots$$
$$+ bA + bB + \ldots + cA + \ldots$$

§9. DEFINITION OF SUBTRACTION AND DIVISION.

(*a*) *Addition and Subtraction.*

Definition of Subtraction:—
" − " is annulled by the corresponding " + "
i.e.,
(1) $a - b + b = a$

Multiplication and Division.

Definition of Division:—
" ÷ " is annulled by the corresponding " × ."

$a \div b \times b = a$

(*b*) To prove that[1]

(2) $a + b - b = a$
Let $a + b - b = n$
Then $a+b-b+b=n+b$
Put $a + b = k$
Then $k - b + b = n + b$
$\therefore\ k = n + b$
$\therefore\ a + b = n + b$
$\therefore\ a = n$
i.e., $a = a + b - b$

To prove that
$a \times b \div b = a$
Let $a \times b \div b = n$
$a \times b \div b \times b = n \times b$ [§3, (γ), (δ)]
Put $a \times b = k$
$k \div b \times b = n \times b$ [§3, (γ), (δ)]
$\therefore\ k = n \times b$ [§7, (1)]
$\therefore\ a \times b = n \times b$ [§3, (γ)]
$\therefore\ a = n$ [Law of Exclusion]
$\therefore\ a = a \times b \div b$ [§3, (γ)]

§10. PROOF OF COMMUTATION for " − " and " ÷ ."

(1) To prove
$a + b - c = a - c + b$
Now $a+b-c=a-c+c+b-c$
Put $a - c = k$
Then R.H.S. $= k+c+b-c$
$= k+b+c-c$
$= (k+b)+c-c$
$= k+b$
$= a-c+b$

To prove
$a \times b \div c = a \div c \times b$
Now $a \times b \div c = a \div c \times c \times b \div c$ [§9(1) & §3 (δ)]
Put $a \div c = k$
Then R.H.S. $= k \times c \times b \div c$ [§3(γ)]
$= k \times b \times c \div c$ [§3, (δ); §7 (1)]
$= (k \times b) \times c \div c$ [§3, (δ)]
$= k \times b$ [§9, (2)]
$= a \div c \times b$

(2) To prove
$a-b-c = a-c-b$
Now
$a-b-c = a-c+c-b-c$
$= (a-c)+c-b-c$
$= (a-c)-b+c-c$
$= (a-c-b)+c-c$
$= a-c-b$

To prove
$a \div b \div c = a \div c \div b$
Now
$a \div b \div c = a \div c \times c \div b \div c$ [§9 (1)]
$= (a \div c) \times c \div b \div c$ [§3 (δ)]
$= (a \div c) \div b \times c \div c$ [§3 (δ), §10 (1)]
$= (a \div c \div b) \times c \div c$ [§3 (δ)]
$= a \div c \div b$

§11. REMOVAL OF BRACKETS.

[See §3, (ε) and §7 (2)]

(1) $a+(b-c) = (b-c)+a$
$= b-c+a$
$= a+b-c$

$a \times (b \div c) = (b \div c) \times a$ [§7 (1)]
$= b \div c \times a$ [§3, (δ)]
$= a \times b \div c$ [§10]

(2) $a-(b+c)$
$=a-(b+c)+b-b+c-c$
$=a-(b+c)+b+c-b-c$
$=a-(b+c)+(b+c)-b-c$
$=a-b-c$

$a \div (b \times c)$
$=a \div (b \times c) \times b \div b \times c \div c$ [§9(2)]
$=a \div (b \times c) \times b \times c \div b \div c$ [§10]
$=a \div (b \times c) \times (b \times c) \div b \div c$ [§3 (δ); §7 (2)]
$=a \div b \div c$ [§9, (1)]

---

[1] In most books the definition of " − " and " ÷ " is given as *both* (1) and (2), without proof that these equations are consistent.

(3)
$$\begin{array}{ll}
a-(b-c) & a\div(b\div c) \\
\quad =a-(b-c)+b-c-b+c & \quad =a\div(b\div c)\times b\div c\div b\times c \\
\quad =a-(b-c)+(b-c)-b+c & \quad =a\div(b\div c)\times(b\div c)\div b\times c \\
 & \qquad [\S 11,\ (1)] \\
\quad =a-b+c & \quad =a\div b\times c
\end{array}$$

(4) Note that while $a\,(b+c) = ab + ac$ [§7 (5)]
$a \div (b+c)$ is not equal to $a \div b + a \div c$

Exercise—Prove this.

(5) To prove that $(a+b) \div c = a \div c + b \div c$
Let $(a+b) \div c = n$ and $a \div c + b \div c = y$
Then $(a+b) \div c \times c = n \times c$ [§3, (δ)]
$\therefore$ $a + b = n \times c$ [§9 (1)]
And $(a \div c + b \div c) \times c = y \times c$ [§3, (δ)]
$\therefore$ $a \div c \times c + b \div c \times c = y \times c$ [§7, (1), (5); §10]
$\therefore$ $a + b = y \times c$
$\therefore$ $n \times c = y \times c$ [§3, (γ)]
$\therefore$ $n = y$ [§7, (4)]
$\therefore$ $(a+b) \div c = a \div c + b \div c$

§12. THE RULES OF SIGNS.

(1) "$(+) \times (-) = -$"
Let $c \times (-b) = n$
Now $c\,(a + b - b) = ca$ [§9, (2)]
$\therefore$ $ca + cb + n = ca$ [§8, b]
$\therefore$ $ca - ca + cb - cb + n = ca - ca - cb$ [§3 (δ), §10]
$\therefore$ $n = -cb$. Hence the above rule.

(2) "$(-) \times (-) = +$"
Let $(-b)\,(-d) = n$
Now $(a-b)\,(c + d - d) = (a - b)\,c$ [§9, (2)]
$\therefore$ $ac + ad - ad - bc - bd + n = ac - bc$ [§8, b; §12 (1)]
$\therefore$ $ac - ac + ad - ad - bc + bc - bd + bd + n$
$= ac - ac - bc + bc + bd$ [as in §12 (1)]
$\therefore$ $n = bd$. Hence the above rule.

§13. DEFINITION OF "0" AND "1."

$$\begin{array}{ll}
b - b = 0 & b \div b = 1 \\
\therefore\ a + 0 = a & \therefore\ a \times 1 = a \quad [\S 9,\ (2)] \\
\text{But } a + 1 \text{ is not equal to } 1 & \text{While } a \times 0 = 0 \quad [\S 7,\ (5)]
\end{array}$$

§14. INDEX LAW, THE RADICAL SIGN, AND THE FRACTION.

(*a*) The extended form of the Numerical Law for multiplication is called the Index Law, viz. :—

$$a^n \times a^y = a^{n+y}$$

(*b*) Definition of the Radical Sign:—

$$\left[\sqrt[n]{a}\right]^n = a$$

Note in particular $\left(\sqrt{-1}\right)^2 = -1$

or if $i = \sqrt{-1}$

then $i^2 = -1$

(*c*) It can be proved that $x^{\frac{p}{q}} = \sqrt[q]{x^p}$, and that $x^{-n} = \frac{1}{x^n}$

(*d*) Either $a : b$ or $\frac{a}{b}$ means $(a) \div (b)$

§15. The above concludes the elements required for the formal manipulation of ordinary Algebra. We are not here concerned with the further developments of Algebra called Trigonometry, Calculus, and generally Analysis.

The concluding sections deal with the five interpretations; four of them more or less partial, the fifth and last complete.

§16. INTERPETATIONS OF ORDINARY ALGEBRA.

The Four Partial Interpretations.

(*a*) THE FIRST INTERPRETATION.—*Arithmetical.*

"a" may stand for a definite quantity.

This is the original interpretation of Algebra and the one for which it was invented. Hence the saying: "Algebra is generalized Arithmetic."

This interpretation fails when we come to consider $\sqrt{-1}$, for no *quantity* can be found which when squared equals -1.[1]

Exercise—

Interpret $a^2 - b^2 = (a - b)(a + b)$.

(*b*) THE SECOND INTERPRETATION.—*Cartesian.*

Some of the symbols may stand for *variable* quantities, which are frequently considered as the co-ordinates of a moving point.

Example—

$y = mx + c$ is called the "equation of a straight line." Here m and c are definite quantities, and x and y are two interdependent variables, e.g., co-ordinates of a point moving in a straight line in the plane of the axes.

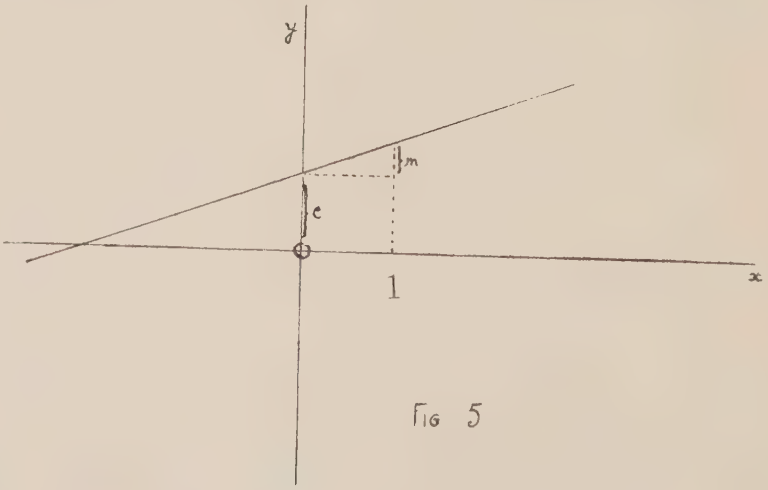

Fig 5

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[1] NOTE 1.—The phrases "complex quantity," "unreal number," "imaginary number," &c., involve logical contraries, and indicate mere shirking of the difficulty.

NOTE 2.—In practice we substitute *number* for *quantity* in our thinking.

NOTE 3.—Here $a \times b$ means "Do to 'a' what you would do to unity to produce 'b'"—*not* 'b times a,' which only holds when "b" is a whole number.

This is called Graphical Algebra, or Analytical Geometry, or Cartesian Geometry after the inventor Descartes.

This interpretation also fails for $\sqrt{-1}$.

When there are more than three variables the geometrical representation fails.

(c) THE THIRD INTERPRETATION.—*Euclidean.*

"a" may stand for a line a units long. "ab" for a rectangle whose sides are lines a and b units long respectively. "abc" for a brick (rectangular parallelopiped) whose sides are a, b and c units long respectively. (Fig. 6)

This interpretation fails for terms of higher order than the third.[1] It also fails for $\sqrt{-1}$; and abc ÷ d is ambiguous as to the shape of the rectangle, and is seldom employed.

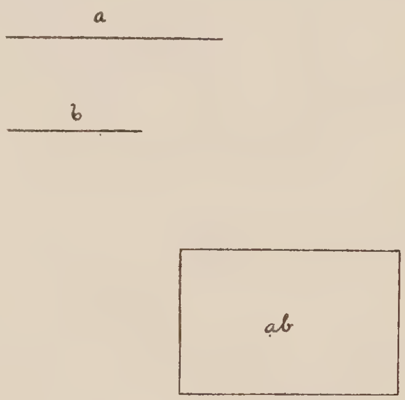

Fig 6.

Exercise—

Interpret $a^2 - b^2 = (a - b)(a + b)$.

(d) FOURTH INTERPRETATION.—*Vectorial.*

"a" may stand for a *directed quantity*, e.g., a translation, a velocity, an acceleration, a force, &c.

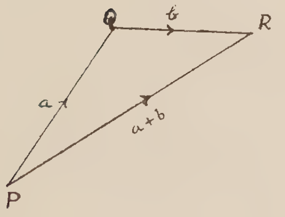

Fig. 7.

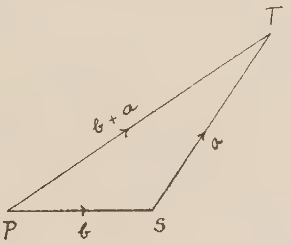

Fig 8.

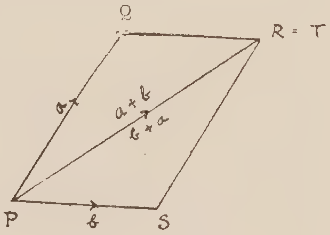

Fig 9

(1) *Meaning of* "+". By a + b we mean: draw P Q for a and then Q R for b, then P R represents a + b (Fig. 7). Similarly P T represents b + a (Fig. 8).
Combining Fig. 7 and Fig. 8 we obtain Fig. 9, showing that a + b = b + a.

NOTE.—This is sometimes called the parallelogram law.[2]

(2) *Meaning of* "−". This is defined so as to satisfy the equation of §9 (2), viz., a + b − b = a.

Now a + b takes us from P to R.
a + b − b takes us from P to Q.
Therefore "− b" must take us from R to Q.
Therefore "− b" stands for a vector equal in length but opposite in direction to "+ b."

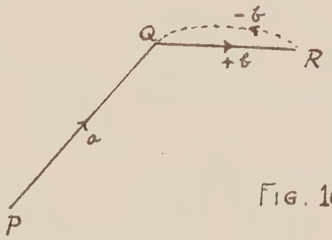

Fig. 10

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[1] Failure to understand the partial nature of interpretations is responsible for the "fourth dimension" twaddle.

[2] The fact that vectorial addition as defined obeys the commutative law does *not* prove the "parallelogram of forces"—it is a common fallacy to suppose that it does.

Exercise—Show that this definition satisfies §9 (1).

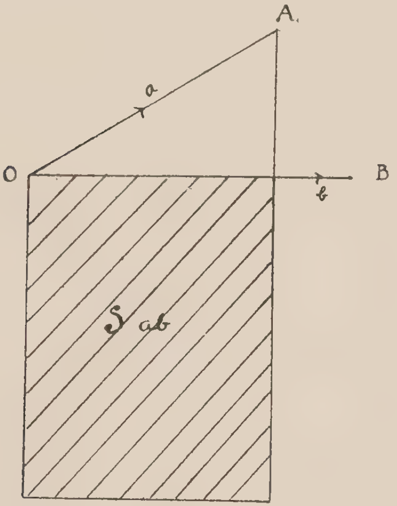
(3) *Meaning of multiplication.*

There are two elementary "products" of a, b in vectorial algebra, viz., the vectorial product, Vab, which does *not* obey the commutative law, and the scalar product Sab.

In the fully developed vectorial algebra, called Quaternions, ab is taken as the "sum" of Vab and Sab.

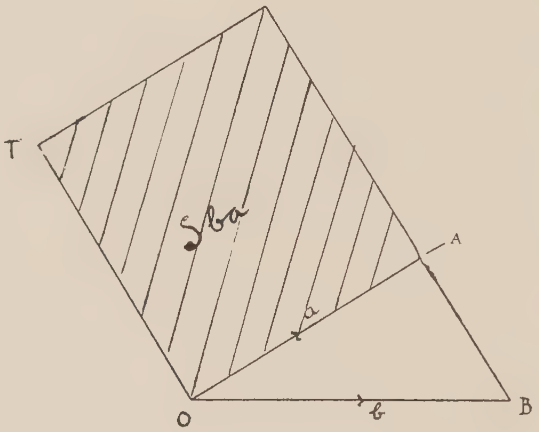
We shall deal with S ab only.

Sab is defined as the number of units of area in a rectangle, one of whose sides is equal in length to b, and the other side is the length of the projection of a upon b. (Fig. 11.)



(OR = OB)

Fig 11.



(OT = OA)

Fig 12

Exercises—

(1) Projection of a upon b is called P ab. Does P ab = P ba?

(2) By comparing the triangles O A R (Fig. 11) and O B T (Fig. 12) prove that Sab = Sba (see Fig. 13).

When the angle between the vectors is acute, Sab (which is a number of units of area, not the area itself) is positive, and when the angle is obtuse Sab is negative.[1]

Exercises—

(1) Show that vectors obey the Distributive Law, &c.

(2) Prove Pythagoras' Theorem, Euc. I, 47, and Euc. II, 12, 13, &c.

(3) Interpret $a^2 - b^2 = (a + b)(a - b)$.

(4) *Division.* As for Sab the Law of Exclusion does not hold, division is not unambiguous, and therefore is not used. This interpretation also fails for $\sqrt{-1}$.

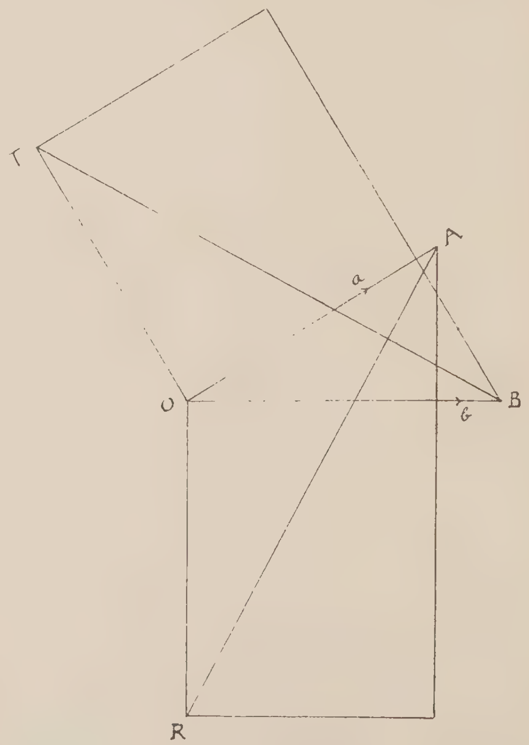


Fig 13

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[1] This is the convention in elementary work, e.g., Henrici's or Heaviside's. In Hamiltonian Quaternions the convention is reversed.

§17. THE FIFTH AND ONLY COMPLETE INTERPRETATION.—THE ARGAND DIAGRAM.

This was invented by Argand in order to give a meaning to $\sqrt{-1}$, and was derived from the Cartesian representation.

Two perpendicular lines are taken, and equal units of length are measured off both, as in the Cartesian representation. Those along one line are called 1, 2, 3, &c.; those along the other are called i, 2i, 3i, &c.[1]

To represent a so-called "complex quantity."

e.g., 2 + 3i; measure 2 along the "real" axis and 3 along the "unreal" axis, complete the rectangle and draw the diagonal, O P in Fig. 14. Then sometimes the point P, but more usually the *vector* O P is the Argand interpretation of 2 + 3i.

NOTE.—There is a one to one relationalship between the doubly infinite system of complex quantities and the doubly infinite system of points in the Argand plane.[2]

(1) *Meaning of "+" and "−".* Consider a numerical example:

$2+3i$ [O P in Fig. 14]
$\underline{3+\ i}$ [O Q in Fig. 14]
$\underline{5+4i}$ [O R in Fig. 14]

In the figure O P + O Q = O P + P R = O R.

Hence we can prove that Argand addition follows the vectorial law [§16 (d) (1)] and is commutative.

So for subtraction, as in §16 (d) (2).

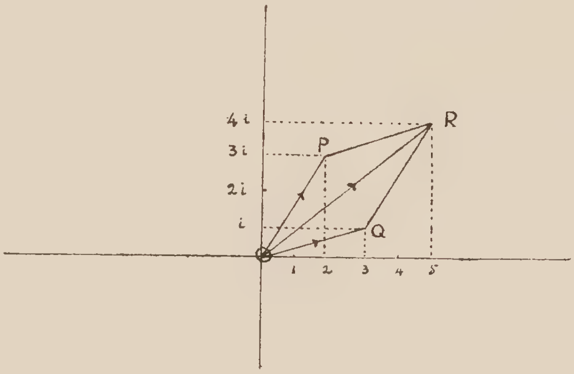

Fig. 14.

(2) *Multiplication and Division.*

NOTE.—*The Modulus.* The number of units of length in O P is called the Modulus of the complex quantity that O P represents.

By Pythagoras' theorem Mod (a + i b) = $\sqrt{a^2 + b^2}$

(*a*) Let O P be a + i b, and O Q be n + i y, then by *formal* multiplication (remembering $i^2 = -1$)

$(a + i b)(n + i y) = (a n - b y) + i (b n + a y)$

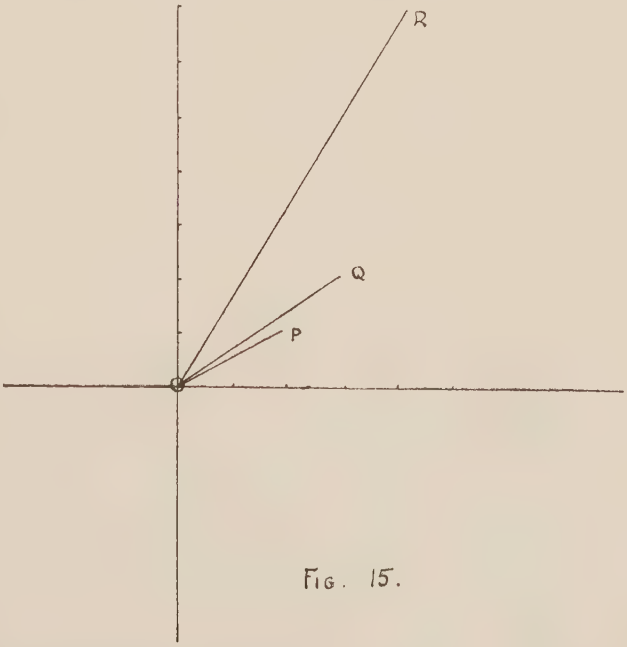

Fig. 15.

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[1] Note that O = O i, i.e., the origin is on both axes.
[2] I omit all reference to Riemann's surface, &c.

Now $(an - by) + i\,(bn + ay)$ has the form $A + iB$, i.e., is a vector, say OR. (Fig. 15.)

Then $\quad \text{Mod } OR = \sqrt{(an - by)^2 + (bn + ay)^2}$

$$= \sqrt{(a^2 + b^2)(n^2 + y^2)} = \text{Mod } OP \times \text{Mod } OQ$$

That is, the length of OR is the product of the lengths of OP and OQ.

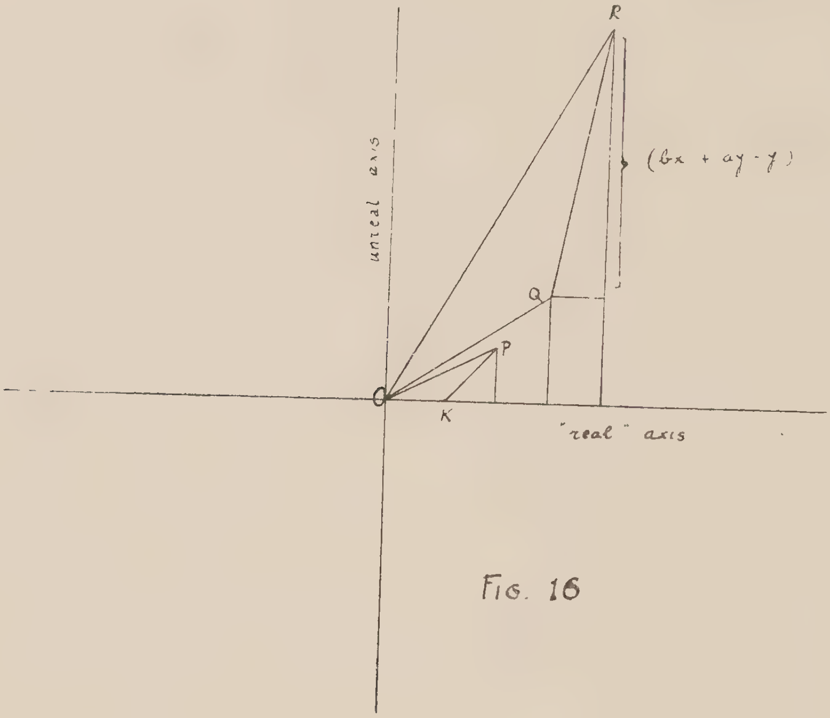

Fig. 16

Now join P to K [i.e., to $1 + 0.i$].

Then noticing the "co-ordinates" of K, P, Q, and R we have

$$OK = 1, \quad OP = \sqrt{a^2 + b^2},$$

$$OQ = \sqrt{n^2 + y^2}$$

$$PK = \sqrt{(a - 1)^2 + b^2}$$

$$RQ = \sqrt{(bn + ay - y)^2 + (an - by - n)^2}$$

$$= \sqrt{(n^2 + y^2)\,[(a - 1)^2 + b^2]}$$

$$\therefore \quad \frac{OR}{OP} = \frac{RQ}{PK} = \frac{OQ}{OK}$$

Hence the triangles ORQ, OPK are proportional, and therefore equiangular.

Hence the *interpretation of multiplication:* to obtain $\alpha\,\beta$ (where α and β are complex quantities of the form $a + ib$), rotate α counterclockwise through an angle equal to the angle made between β and the positive real axis, and then "stretch" it to Mod β "times" its original length.

Exercise—

Show that $\alpha\,\beta$ thus defined obeys the commutative law.

(*b*) *Division.* By considering $OR \div OP = OQ$ we obtain the interpretation: To obtain $\alpha \div \beta$, rotate α clockwise through an angle equal to the angle made between β and the positive real axis, and then "stretch" it to $\frac{1}{\text{Mod}\,\beta}$ "times" its original length.

Exercise—

(1) Interpret $\alpha^2 - \beta^2 = (\alpha - \beta)(\alpha + \beta)$
(2) Interpret i as an operator.
(3) Show that Argand vectors obey the Distributive Law and the Law of Exclusion, &c.

TEACHERS, DOCTORS, AND MDME. MONTESSORI.

(Presidential Address to the Training College Association)

By Professor J. A. GREEN.

My audience will surely appreciate the difficulties of my position in having to follow Professor John Adams as President of this Association. It was singularly opportune that, during his Presidency, he should have been elected by the Council of the British Association to the Presidency of the Education Section of that Association for the Dundee Meeting, but the fact that he should have occupied both positions in the one year makes him a still more terrible person to follow in this, and the admirable address which he delivered to this Association at the last annual meeting is one which I cannot hope to equal.

In that address Professor Adams dealt wisely and hopefully with the function of the Training Colleges. Such a subject is one that falls very naturally to your President, and happily that function is so many-sided—in spite of its ultimate unity—that Presidents may follow one another in dealing with it without very seriously repeating themselves. If, then, I make a more or less desultory approach to the same problem, it will be with the hope of putting forward a plea for what I may perhaps call a still more liberal study of our profession in Training Colleges and Universities.

It is, I think, extremely difficult to appraise the results of our work, very largely perhaps because the interests of students and of staffs in Training Colleges are so divided. Whilst we should all admit the present necessity of continuing the general education of our students, we all must recognize that we are first and last concerned in the making of schoolmasters. In the days of the pupil teacher, the Training Colleges were very much less responsible for the type of teacher who manned the schools than they are now. The majority of our students come to us with the merest rudiments of technical skill, and we are expected to give form and shape to such professional aptitudes as they bring with them. Whether we have sufficiently adapted ourselves to this new state of things I do not know, but in any case it will not be wrong to emphasize the peculiar responsibility it puts upon us, and to state some questions that arise out of it.

At present, of course, the vast majority of the certificated teachers in the schools of the country are the products of the old order. Eloquent testimony has often been paid to the technical efficiency of these men and women :—

> "As a body of instructors trained in the art of teaching, the staff of the elementary schools is a miracle of efficiency. The public-school master would pale before their task, and sink beneath the handicap. The size of the class; the daily choice between noise, if the windows are open, and smell, if they are shut; the physical unfitness of the boys; the lack of co-operation at home, and the consequent absence of foundations on which to build, seem to be hostile conditions so enormous in their aggregate as to preclude any very perceptible progress in the whole class. But the teacher has the great weapon of method . . . (he) has mastered the technique and theory of his work. A hundred methods are at his command to draw out the backward, to untie the knots in the confused mind, to stimulate the lagging interest of the lazy. . . . No trick of voice nor device of illustration or gesture is forgotten; every resource of shape and colour is employed, and the absorption of the teacher's own personality in his subject is as complete as though he were an actor enthralling 3,000 willing listeners instead of three score little boys."

These are not my words, but those of Mr. Alexander Paterson, whose book, "Across the Bridges," giving a picture of life on the south side of the Thames, is of course familiar to all of us. The handsome tribute he pays to the technical skill of the teachers we shall recognize as deserved still by the best of the men and women we are now turning out, though in Mr. Paterson's opinion, "the *average* certificated man is an extraordinarily good teacher when compared with his colleague in a public school."

Whether Mr. Paterson is right or wrong in assigning this high level of teaching skill to the Training Colleges we need not discuss; in any case, as you know, he does not regard this craftsmanship as being a satisfactory test of efficiency, and we may perhaps consider whether or not we have in the past paid too much attention to the mere craft of teaching, and too little to other qualities which would tend to lift the teacher from the position of the craftsman to that of the professional man.

If we compare the position of the teacher with that of the medical man, shall we say, who has in recent years been brought into such very close relation to the teacher, it will perhaps serve to bring out points important enough for our consideration. When the School Medical Officer is dealing with his Committee, he is listened to as a man with special knowledge. His Committee recognize that they are laymen, and that they are quite unable to judge of the wisdom or folly of their officer's proposals. Of course they have to find the money, and that may lead them to say "No," but it is on grounds of this kind or on some political ground that they oppose him, and not on the ground that they join issue with the doctor's professional judgment. But when it comes to the teacher, the position is wholly different. Every member of an Education Committee, every man in the street knows, or thinks he knows, what is good for the children. The schoolmaster may know more history, and geography, and grammar, or more Greek and Latin than the members of his Committee ; but this superiority does not constitute a professional mark, for men of other professions (the Church and the Law, for example) may be equally well versed in these subjects, and yet they are not schoolmasters. His Committee recognize, of course, that the schoolmaster can manage a classroom full of difficult boys admirably, but this is something of the nature of a trick acquired to make possible the process of retailing knowledge to many children at once. It is perhaps unfortunate that the attitude of our teachers themselves should give authority to this view of their work, or at least that they should accept it without serious protest. The teacher tends to pride himself upon his technical efficiency, with the result that the keener spirits amongst them are quick to pick up the latest device of method often quite uncritically. They are, of course, largely the victims of circumstances. They have to please their masters, and in order to do that they must produce some external show which will appeal to a public not too well-informed. The newer the device, the better for this purpose. The position is aggravated in the Elementary Schools. In the nature of things the Elementary School teacher has to appeal to a more popular *clientèle*.

Of course there is and always must be such a thing as craftsmanship in teaching, as there is a craft in the handling of patients by a medical man. It is probably also true that a teacher's craftsmanship will very largely determine his professional success, just as it does in the case of the doctor. But doctors at any rate have managed to persuade us that the mysteries of their profession rest upon special knowledge relevant to our condition. Our own apprehensive helplessness is, of course, a great factor in the doctor's favour, and we willingly endow his profession with the means for pursuing research into problems which are still unsolved. We laymen probably do not realize the full extent of medical ignorance, though we have a shrewd suspicion that there is much guesswork in the prescriptions of the ordinary practitioner.

A teacher's procedure is admittedly at least equally empirical, though, unlike the doctor, he has not persuaded his public that there is any specific scientific knowledge at his back. Indeed, one might go further and express a doubt on the question whether the average classroom practitioner could write down any scientifically ascertained facts which do affect his own technical proceeding. He is an empiricist not only in name but in fact, and so long as this is so, he will continue to be the excellent craftsman that he is, and no more. Some perhaps would say that is all we want—good practical teachers, excellent disciplinarians, and all the rest. If you or I were asked about a doctor, whether we would sacrifice a little of the pleasing bedside manner for a little more skill in diagnosis, I have no doubt what our answer would be, and I personally would willingly sacrifice a little of the practical skill of the old-time drill master, and even some of his dexterity in oral presentation, for better knowledge of the principles which lie behind the art of the educator.

I would do so for two reasons. In the first place, it is obvious that a sound knowledge of principles would carry the practitioner much further, particularly in dealing with individuals in his class. In the second place, it would protect him from all sorts of dangers which at present beset his path. He is often painfully aware of the insecurity of his own intellectual position. A new Director, a new Inspector, a new Head Master, are sources of anxiety to him. He sets himself to study their personal idiosyncracies, and tries hard to do as he supposes they would wish him to do. Thus he is the victim of every new faddist who turns up, especially if the faddist is fortunate enough to secure a measure of official patronage. It would matter less if the official patronage itself were always based upon sound knowledge, but nobody would claim that this is the position at present. The only protection against ignorance in high places is knowledge, and the teacher who has firm hold of established principles may freely accept or reject the views of those in authority over him so far as they concern his work within the four walls of his classroom. It is of even greater practical importance that he should be in a position to look intelligently, that is to say, critically, at new methods which may from time to time receive a wide advertisement. It is the teacher who is the key to the situation now. He has many of the rights of the free man, though he has not in most cases probably a sufficiently sure foundation of principle to make him venture far from established traditions. He is keen to pick up practical tips and ready to adopt new methods, but without the guidance of principles he often only succeeds in substituting one jargon for another, as has happened to some extent at least in the case of the new geography, or else he is carried away by the zealous advocacy of some patent device from the other side of the "Herring Pond" or elsewhere—witness the ambidextral fad which invaded the schools some years ago, the absurd lengths to which the dramatic example of Sompting are sometimes carried, and last, but not least, we now have Mdme. Montessori.

The Montessori Method

is so much in the air that I dare say we are all a little tired of it, but there are some aspects of the subject which I have not seen sufficiently discussed, which I venture to bring before you this morning even at the risk of being a bore. It is all the more important because the Board of Education itself has recently published a pamphlet by Mr. Holmes on the subject which must, of course, bring the matter into greater prominence than ever. Although Mr. Holmes is not himself sound in his knowledge of the History of Education, his pamphlet gives quasi-official authority to reviewers in the *Athenæum* and in the *Times*, who prophesy that the Italian *Dottoressa* is destined to take higher rank than either Pestalozzi or Frœbel as Educational Reformers.

Although such prophecy is not likely to be fulfilled, the advent of Mdme. Montessori's book is not without value. Probably no book has caused so much stir in the educational world as that of Dr. Montessori since Pestalozzi published "How Gertrude Teaches her Children." But Pestalozzi was read more on the Continent than in England, whereas we English are talking and reading Montessori much more than Germany, for example. The change is significant. Is it that we are ready to give up the old-fashioned ideal of home education, whilst Germany, in spite of the advance of Socialism, sturdily resists the temptation to relieve parents of their natural function ?

Whatever the cause, it is a welcome sign of national interest in pedagogical problems that not only teachers but great newspapers should give so much attention to this Italian work.

Mdme. Montessori has revived the great cry with which Pestalozzi startled Europe a hundred years ago—"Life educates." She has the advantage of Pestalozzi in so far as biological principles have been more clearly formulated. Otherwise, however, there is much in common between Pestalozzi's treatment of his small boy as recorded in his Diary and the Method of Montessori. "You must lead your boy by the hand into the great open lecture hall of Nature, and teach him there, with mountains and valleys by your side. . . . But at such times let Nature be his teacher rather than you. Do not mind if natural objects attract his attention away from you. Birds and caterpillars will teach him better than you. If they catch his eye, let him alone. Be quiet." *Freedom* and auto-education are the Montessori catchwords; Pestalozzi based his procedure on spontaneity and concreteness; Frœbel upon self-activity and interconnectedness. But Pestalozzi required his boy to do a little work every day, whether he wished or no, and here, apparently, he parts company with Mdme. Montessori, who is nearer to Tolstoi perhaps; but Tolstoi was still more thorough-going than she in his attachment to the principle of freedom. The pupils at Yasnaya Polyana were older, of course. Nevertheless, school was Liberty Hall for them. And Mr. Holmes sees no reason why Montessori principles should not apply to older children. Tolstoi's boys and girls brought nothing with them—neither books nor copybooks. They had no home lessons. Not only did they carry nothing in their hands, but they had nothing to carry even in their heads. They were not obliged to remember any lesson—nothing that they did the day before. They were not vexed by the thought of the impending lesson. They brought with them nothing but their impressionable natures and their conviction that school to-day would be as jolly as it was yesterday. They did not think of their classes until they had begun. No one was ever rebuked for tardiness, and they never were tardy. They sat down wherever they pleased: on the benches, the tables, the window-sill, the floor, and in the armchair. The moment one of them made up his mind to sit down in the chair, another guessed his intention and a struggle ensued. During a writing lesson they sat down in a more orderly way, but they kept getting up in order to look at the work of other boys and to show theirs to the teacher.*

Tolstoi was of course an out-and-out anarchist. He was a genuine believer in auto-education. Mdme. Montessori's conception of freedom and self-education is much more limited than his, and I venture to think that it is even more restricted than she herself supposes. She tells us, for example, the little ones are not allowed to offend against good breeding or to interfere with the comfort of others. But are these two limitations quite easy to set up as attitudes of mind in children under six years of age? Imitation will help a great deal in the matter of breeding, but it will not do everything, and there must be many revolts against what is, from the children's standpoint, arbitrary interference with their liberty. Nor do young children easily enter into the notion of the "collective interest," to use Mdme. Montessori's own term. Here again, in practice it must be the directrice who decides when that interest is in danger, for little people of three or four are not very sensitive to any other interest than their own.

As a scientific treatise on pedagogy, the Montessori book seems to me thoroughly shallow and disappointing, because it gives no account of the failures or of the difficulties of the system. It is the *Swiss Family Robinson* of Educational Literature. Everything goes smoothly from the beginning, so far at least as the children are concerned. It is only the directrice who goes wrong now and then. Some mentally-defective children learn to read and write. We are not told whether all did, or whether the acquirement was of any use to them, or whether they learned equally quickly, or whether they lost the art subsequently. That some or all these things did happen, I have no doubt. Similarly, in these tenement nurseries, success, immediate and complete, is the uniform record.

If you would take the trouble to compare this sort of thing with any ordinary laboratory record of the study of animal behaviour, shall we say, you would realize the difference between an account of scientific procedure and the collection of pretty stories which illuminate Mdme. Montessori's book. Even if we accept provisionally the general principle that the teacher should leave life to manifest itself freely, we should like to know exactly what happens when this is done. Certainly, we could study children more effectively when they were free, but can we, dare we leave them free? Is it freedom, or anything like it, that Mdme. Montessori gives? We can only make quite sure by experimenting, unless we have already tried it in the nursery or in the baby-room.

We may, with all our hearts, join in her crusade for the abandonment of fixed desks, fixed seats, prescribed postures, sitting still, and the like. Indeed, we welcome her as a powerful recruit to a doctrine which has been preached for long in our country, notably by the most enlightened Frœbelians, by the Educational Handwork Association, and, of course, by many of the Training Colleges. But can we subscribe to the view that good breeding and mutual consideration will be a conspicuous feature of the school unless the directrice exerts very considerable directing force? Such force may be wholly spiritual, but it is there all the same, and in its absence we shall get something like a bear-garden. In such circumstances we may ask, what is meant by freedom, and what is the relation of the individual to his environment?

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*cp. Pedagogical Articles of Tolstoi, translated by L. Wiener (Dent & Co.), p. 229.

Mdme. Montessori seems to me to miss the spiritual factors on both sides of the account, and a fact which leads her to say that environment is a secondary factor in the development of the child. This seems to me an altogether misleading way of describing a position which involves two factors, each of which is not merely indispensable to the other, but also minutely involved in it. An organ-blower may be described as playing a minor though indispensable part in the recital, but there is no parallel between a secondary function of that kind and the function of the spiritual forces which surround a child.

It is not then with the Montessori ideal that we quarrel, but with the pseudo-scientific account of its principles. The ideal is after all not new. Still more unsatisfactory is what we may call the positive pedagogy of the Children's Houses. If there is less " freedom " in the discipline than actually appears, there is obviously very much less than is claimed when we come to the part played by the *didactic materials* which are the outcome of the method.

Mdme. Montessori is primarily a specialist in the education and training of mental defectives. She has given much time to the study of the work of Itard and Seguin, who were pioneers in the field of educational work. These two men were direct products of the movement towards the rational treatment of insanity which Pinel and Esquirol had inspired in France. Through the latter the " physiological as opposed to the demoniacal conception " of lunacy became generally accepted early in the nineteenth century. Itard (1775-1838) was a colleague of Pinel, and his interest in feeblemindedness was stirred by the discovery of the " wild boy of Aveyron," who was placed under his charge. He spent six years in trying to teach this idiot child to adapt himself to his new environment, and ended by the child's developing a certain calf-like affection for the creature comforts which surrounded him. Mme. Montessori gives an interesting but incomplete account of this work of Itard's, and ends by saying: " In the education of little children Itard's educative drama is repeated: we must prepare man for social life."[1]

Seguin has exercised still greater influence upon Mdme. Montessori. He was a teacher in Itard's School for Deaf Mutes in the first instance. In America he studied medicine with the object of working out a complete *physiological* scheme of education. He had found that mental deficiency was best treated by careful adaptation of treatment to nervous condition. Just as, when a particular muscle or limb is weak, we may by suitable exercises, restore it to normal condition, so mental deficiency was best treated by isolating defective physiological machinery, as far as possible, and exercising it. As a physiologist he turned naturally to the senses, and invented exercises which would bring each sense into prominent activity. Improvement in sensory discrimination brought with it a general improvement in intelligence. "The physiological education of the Senses is the royal road to the education of the Intelligence" *(Seguin).*

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[1] Surely most of Itard's work was destructive and ours is mainly constructive. He had to undo all the habits which his *protegé* had acquired, and he succeeded in very little else.

Mdme. Montessori has applied this physiological analysis to the case of normal children. She accept's Seguin's principles, and provides her pupils with "games" which will strengthen sensory discrimination. It is rather remarkable that at a moment when the *psychological* analysis of insanity under the leadership of Freund and Jung is making considerable headway, the problem of education should be thus thrown back and based upon a mid-Victorian conception of its nature. Mdme. Montessori's procedure seems to me to be based on an unsound conception of mental life, and her pedagogy is almost more unsatisfactory than her psychology. Do normally-equipped children require special sense training? Is their sensory apparatus not sufficient for their needs? Is intelligence a synthesis of sensory powers?

Watch a small child with the apparatus she provides—take the cylinder insets as examples. He masters the secret in a very short time, and then he turns the cylinders into soldiers, and his big brother of five suggests the holes shall be trenches and the block of wood a fort. Now the whole business is spiritualized. It is a human thing now which we can all watch with interest. But of this kind of escape from the prison-house of didactic materials there is never a word.

Yet we have heard the book described as an educational tonic! I need not continue a criticism which all students of childhood may apply to the whole range of apparatus for sensory training.

Still more unsatisfactory are the devices for teaching reading and writing. I am not sure how rapidly it is the children are said to acquire these arts, but whether it be 10 or 100 hours in which they have been doing things absolutely meaningless to them, it has been exactly so many hours too long, and I am at a loss to find how the principle of freedom applies to these preparatory muscular and visual analyses.

I have spent so long on Montessori because I cannot help feeling that such invasions would be less dangerous if we took more pains to ground our pupils in fundamental principles. With a firm grip of principle, he could read books like Montessori with profit, because he would be in a position to distinguish what may be sound medicine from what is bad pedagogy. He would be in a position to take his stand against the authority of the doctor or the administrator, and against the wiles of the publisher and the manufacturer of didactic material.

Happily, there are signs that teachers are beginning to interest themselves in the more systematic study of pedagogics. The shifting of the emphasis from cognition to purpose in modern human psychology promises to bring that study into very close relation with our problems. But we do not wish to make our students into psychologists. That is not our business. Nevertheless we want to turn them out with a real grip of first principles and with a genuine desire to keep critically abreast of pedagogic inquiry and research. I know nothing more mischievous in our profession than the feeling (which is said to be common amongst certificated teachers) that the possession of the recognized minimum professional qualification is the end of things so far as professional interest and inquiry are concerned.

It seems to me both possible and desirable for the modern Universities to do a great deal to encourage the further study of pedagogy amongst certificated teachers. Something is being done in London, thanks to the encouragement of the London County Council, but taking the country as a whole, opportunities for systematic "post-graduate" study in this direction are not very wide-spread.

I use the term post-graduate in a loose sense to cover the case of the certificated teacher who has graduated at the hands of the Board of Education. Something could be done for this type of student if there were a serious demand. Do we in the Training Colleges send out men and women with the desire to do further work of the kind? And if this is too much to expect, have we succeeded in interesting them in pedagogic inquiry? To revert to my comparison of the schoolmaster and the medical man. It is only a small proportion of doctors who themselves actively engage in medical research, but they all read their *Lancet* or their *British Medical Journal*, in which considerable space is given to researches and their results.

Modest as our own Association's attempt to run a journal which shall stand midway between the technical journals for specialist readers and those which are in the main of a quasi-political character, it might do much more and much better if it were supported by a considerable body of men and women actually engaged in classroom work.

There is, however, another kind of professional interest which I sometimes think we do too little to excite among our students. I have already referred to Mr. Paterson's estimate of the technical efficiency of the teachers in elementary schools. But he finds this technical excellence, upon which we are apt to pride ourselves, an actual danger —all the more real because it is so insidious. The path of learning is made too smooth for the pupils—there is too much teaching and too little work—the lads leave school with little or no notion of tackling a disagreeable job thoroughly when the occasion arises, and—the point of view of teachers and of those in authority over them is often mistaken. School is, of course, an invention to provide for the deficiencies of home life, and these deficiencies are not to be filled by mere knowledge, though the organization of the primary school is in the main devised as if it were. Why is it, asks Mr. Paterson, that in the primary school there are teachers, and in the secondary school there are masters? When we hear of a "Class Teacher's Federation" we know we are concerned with an organization of workers in primary schools; the like organizations in the secondary school world are called Assistant Masters' Association, and Association of Assistant Mistresses respectively. The difference of course extends to Secondary Day Schools where authorities never appoint teachers, but masters, whatever their grade.

This titular distinction marks a traditional difference of function which in Secondary Schools divided the permanent from the visiting staff, and which in Germany is expressed by the difference in meaning between *Erzichen* and *Lehren.* Our professional literature of course distinguishes between the two functions by the words teacher and educator, but in the actual language of our people, in non-technical English, school-teacher and school-master best express the difference.

I am tempted almost to fill my paper with citations from Mr. Paterson's chapters on "School Life and School Influences," as he knows them in that dismal quarter of this great city; but you know them already, and although conditions in other great towns are rarely quite so distressingly bad, what is said is substantially true of a large fraction of the schools in the larger urban centres of Great Britain—at least so far as the social relations between teachers and children are concerned. "The teachers have no real knowledge of the boy's life. They do not see him at home, or in the street at night, when his nature is free and he is ready to share himself with anybody." Teachers live far away from the schools where they work. "In poor districts it would be difficult to find a twentieth of the total number of teachers living within two miles of the homes of their boys." Boys therefore connect their "teachers' faces with desks and inkpots, copybooks, blue pencils, and the cane." At fourteen they slip away out of their teachers' life and ken.

This position would matter less, probably, if the rank and file of our teachers realized exactly the great gulf that is fixed between them and their boys. The whole problem of the relation of the school to the children would be seen by many of them in a new light if that gulf could be bridged. I am not unmindful of the self-sacrificing devotion of hundreds of teachers to their charges, but this as a rule has been awakened by distressing experiences such as the Training College did nothing to prepare them for. A seminary life may be the worst kind of preparation, unless we who control it do something to bring it into closer relation with the life outside, and child-life in particular. I could wish our students to read books like those of Mr. Bray, Mr. Paterson, Mr. Russell, Mrs. Bell, and the like, as part of their training for a profession which must more and more come to be regarded as occupying the central position of the social organism. It may be a very heterodox view, but I would myself prefer this to most of the dry-as-dust formulæ of the old-fashioned books on School Method.

I fear I have exhausted your patience, and taken undue advantage of a President's privileges, but I should like in conclusion to say that in my view ideas like those I have very briefly indicated are hardly compatible with working for Syllabuses imposed upon us by an external authority. I have the greatest possible respect for the Board of Education, and my respect for its present chief officer has been enormously increased by his frank avowal that Education and the Board of Education were by no means synonymous terms. The prime function of the Board is administrative. Its chief interests are in that direction. Our business is educational, and only those who are free can educate in the best sense of that word. If we exercise freedom we can prepare our students to exercise it when they enter upon responsible careers.

Freedom of course brings additional burdens, but in face of the gains which freedom can bring, I for my part think it is not merely a privilege but a duty to exercise it.

SEX STUDIES IN THE SCHOOL AND TRAINING COLLEGE.*

By NORAH MARCH, B.Sc.

(Read at the Conference of the Training College Association).

A Consideration of Method.

WHILE it is generally accepted by educationists, medical authorities, social workers, sociological students, and, to a growing extent, by the general public, that the sex-enlightenment of children is urgently desirable, hesitancy is expressed as to the best method of procedure. There are those who feel that such instruction would be most effectively given by the parents. Others feel that the school should be responsible for tuition in sex matters, and in this way, at any rate, prepare the parents of the future for their responsibilities in this and allied directions. Other opinions again, favour expert instruction by medical men and women, given by means of short courses of lectures to adolescent boys and girls. The dissemination among boys and girls of literature dealing with sex subjects is also a method which is, to some extent, practised. A great amount of good has been done in relieving ignorance and advancing the purity of adolescents and adults by such pamphlets as are largely issued by certain English and American societies working for the spread of social and moral hygiene, while, in Germany, it would seem that the pamphlet method, on the whole, has had regrettable results, perhaps due, in part, to the fact that some of the pamphlets have not been written wisely, and have stimulated, rather than allayed, sex-practice, sexual desires, and curiosity. In any case, the pamphlet method has the disadvantage of giving undesirable emphasis to the sex-life, and may be responsible for conveying the impression that sex is a subject upon which instructors are ashamed of talking.

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* The writer alone is responsible for the contents of this article; in particular she wishes it to be understood that it in no way commits the Principal of the Training College in which she is working.

In the case of a series of lectures to boys and girls, given by a medical man or woman, there is certainly the valuable qualification of authority, but there is risk of instruction being too technical to be assimilative, and, unless a graduated course of biological instruction has prepared the way for the medical lectures, there is the possibility of over-emphasis of sex matters (due to the relegation of the instruction to a specialist) having undesirable results.

Instruction by parents, graded according to the measure of the child's inquiry and capacity for understanding, is thought by many to be the ideal method, but the fact has to be faced that the majority of parents are unfitted by knowledge, experience, and attitude to give the instruction in the most wholesome and valuable way.

And so the responsibility of sex enlightenment appears to be left to the school, and the question arises, "How is it to be done?"

There are certain essential conditions which successful teaching should seek to fulfil, and, keeping these, together with the trinity of aspect—moral, spiritual, and physical—in view, a scheme may be formulated :

I. It should give the sex organs and functions a normal, unaccentuated place in life.
II. In order to do this, the customary obscurity in which the child's search for knowledge is conducted should be illuminated ; the subject of sex should be dealt with in a dignified way, openly, purely, and clearly.
III. Instruction in Sex Hygiene and Physiology should follow naturally and logically.
IV. The ethical obligations of the sex life should be developed and—reasons for moral conduct in sex being supplied—brought into intimate relation with the child's conception of personal responsibility.
V. The course of instruction should form adequate approach to preparation for parenthood.
VI. Throughout, the spiritual beauty of the sex ideal should be inculcated.

If the child comes to school already equipped with pure knowledge of the transmission of human life, the task of the school is to supplement and reinforce the knowledge, bringing to such performance all the advantages of pedagogical methods—and a complete course may be suggested which would do this—at the same time, would inform those who are ignorant, and *re*form the information of those who have gained it from impure sources. In this last class may be found the vast majority of children from the slum districts, children who are reared in environment of limitations and degradation. To achieve this threefold task it will be necessary to begin in the early years of the child's life to lay a foundation, and by means of a Nature Study course beginning (alluding to Elementary Schools) in the Infant Department, introduce the child to the processes of fertilization and, to some extent, to its results. It has to be clearly realized (as Dr. Stanley Hall and his pupils have shown) that the majority of children first ask questions evincing their curiosity as to the origin of babies, between the ages of three years and seven years. The usual custom is to evade these questions or to answer them by a myth or fairy tale, which in a short time, if not immediately, the child tacitly discards and seeks information elsewhere.

Now, it must be remembered that when a young child asks a question as to where it came from (or similar question bearing on the origin of human life) it is *not* asking a question of sexual import. It is merely showing the awakening of the innate curiosity about birth, to which it has the right to receive a direct, true reply—of course in a measure graduated according to its understanding.

To indicate how Nature Study may be made to serve, it is possible to arrange a sequence of types such as shall prepare a background for reference by which human reproduction may be explained. Such types may be dealt with on the best lines of teaching, by first hand observation, and in simple terms.

The study of large flowers, with the reproductive organs clearly shown, reveals to the child where the baby plants come from and how they are made. It is interesting to note that children assimilate the fundamentals of the reproductive processes in plants very easily indeed when they are conveyed in the garb of simple language.

The idea of sex may be brought out by the study of conspicuous unisexual flowers, using the terms "father plant" and "mother plant," and in this connexion the terms "male," "female," "sperm," and "egg," should (having a definite significance) be introduced into the early vocabulary of the child. They are, after all, simple mono- and bi-syllabic words, and present no difficulty.

The agency of the wind and insects in effecting fertilization is coincidentally observed.

The study of animal life reveals the evolution of sex, and types may be selected showing various grades of elaboration in the reproductive processes. It is possible to make such a selection as shall prepare the way for the revelation of human reproduction and to deal with it so that such revelation comes without any undue hiatus, or shock.

Throughout the Nature Study course, reproduction should receive no special emphasis, but should be merely regarded as systematically as are movement, nutrition, family life, in short, all the phases of plant and animal life. Tactful and æsthetic treatment of subject, and ingenious selection of type, will bring out the relation of sex to beauty, care of offspring, including pre-natal life, eggs and their development, home-building, care of reproductive organs, provision of food for offspring, enlargement of maternal form, principles of heredity, &c.

Such a scheme for instruction in sex, infiltrating the Nature Study course of a school (which course would give plenty of scope for revision by consideration of allied types) might attain comprehension of the fundamentals of human reproduction, by, say, the pupils are nine or ten years of age—at any rate this should be achieved well before the beginning of puberty, that is, before the awakening of the sex impulses and sex emotions. Nature Study on similar lines would continue to occupy a place in the school curriculum and then be substituted or augmented by Physiology and Hygiene. Experience shows that at the age of 13 and 14 years these subjects are appreciated by pupils, no doubt due to the fact that the bearing of education upon after-school life is beginning to be realized.

Instruction in Physiology and Hygiene given as having a direct personal application, incorporating the sex organs, their function and maintenance in health, would follow normally; the social diseases receiving equal consideration with other transmissible diseases. In connexion with elucidation of this last point, a very instructive reference by Nature Study may be provided.

Moral Training.

Mere biological instruction would be insufficient to attain the high aim. Moral training is equally important. I would venture to suggest that a course of Nature Study on the lines already indicated, in the hands of a tactful, inspired teacher indirectly achieves a certain amount of moral training, which may be brought home by direct reference to human responsibilities as the age of puberty arrives.

Dr. Fœrster, though he appears to discredit the equal value of biological knowledge with moral training, rightly emphasizes the importance of training the will, of inculcating self-denial, and of training in self-conquest—all of which have a direct application to the sex life.

After the sex functions have been frankly dealt with as indicated, definite reference to moral sex hygiene will come naturally and acceptably to the pupil, and may well find a place in the hygiene lessons, or in the course devoted to the training for citizenship. Moreover, full advantages should be taken of the opportunity afforded by biblical references and religious sanctions to uplift conception of the sex life.

Such moral training in the realm of sex will find its further extension in preparation for parenthood. Instruction in Mother-craft (including child-bearing) for girls, some outline of all that motherhood entails and the responsibilities of fatherhood for boys—should be conveyed before the boys and girls pass beyond the direct school influence. In Elementary Schools the leaving age is a critical age in the sex life, but it normally represents the last chance the school has of exerting direct influence—and I would suggest that, the foundation being laid during school life, some provision be made for extending this influence to the after-school life by means of evening classes, book lists of literature on the subject of parenthood, school societies, &c.

A third aspect of the question which demands its share of attention is the spiritualization of the sex life. Towards this end, recognizing the importance of the emotional relations, the aid of literature, poetry, and fiction may be called in. A careful selection of fictional literature (through which the sex motive runs) will provide abundant material for educational illustration of the spiritual aspect of the relations of sex, e.g., "Little Women," reveals the growth of healthy sentiment between John and Meg. Some German teachers have a carefully selected course of love-stories for boys and girls, by which they aim at bringing out the loftiest and most chivalrous side of passion at an age when the plasticity of the pupil's mind renders it most receptive of idealization.

In the Training College.

In the Training College, courses of work such as would fit the students to deal with the biological approach to sex studies would be necessary. It will be realized though that the few, rather than the many, would be called upon, or indeed feel capable of dealing with the final stages of the sex studies; yet all should have the complete training, not only to enable them to teach if necessary, but for their own personal benefit—to give them the right conception of the sexual life.

The training should, then, proceed along the lines indicated in the school course. The Physiology and Hygiene courses should duly incorporate the Physiology and Hygiene of Sex, some training in the essentials of Child-bearing—together with such information of the social evil, the social diseases, sexual malpractice, and the principles of heredity as may lead them to understand and to uplift the sexual life of the child. The symptoms and correction of sexual malpractice should be duly regarded, and the student should be guided to the understanding of temptations to which boys and girls may be exposed, so that they may be prepared to warn against and to forestall such falling into temptation as might be the outcome of ignorance.

Successful teaching will very largely depend on the teacher, who must deal with the topic without any feeling of embarrassment, who must weave the subject matter so tactfully and cleverly that, though the aim of work is not announced, it is evident by the time it is achieved. When the biological references are skilfully picked up and massed into a whole, human processes may be taught largely by analogy. Skill and foresight in the provision of illustration will largely contribute to success. Further, to keep in view the vivid personal aspect of sex studies, every attempt to accentuate the relation of the other subjects of the school curriculum to the personal experience and requirements of the child should be made.

Value of the Biological Method of Approach.

The biological method of approach to sex studies in school and college, as testified by American experimentalists, is the most successful. It leads up to human sex studies so naturally and unconsciously that there is no shock to the pupils, and consequently no up-stirring of parents or school authorities. Matter-of-fact enlightenment via Nature Study tends to preserve normality, because the child gradually gets the conception of the unity of life and the universality of the sex life. Also, such instruction could hardly be sexually stimulative, the greatest detail of attention being given to those forms most remote from man.

Again, such an aim inspiring Nature Study courses will go towards mitigating the charge so frequently levelled against Nature Study teaching, that it is disjointed, isolated in topics, lacks aim and application.

Conclusion.

I have only attempted to indicate how education in the sex life may be introduced into and dealt with in the school (having in mind, more particularly, the Elementary School and lower forms of the Secondary School, the higher forms of which would admit of appropriate development of the subject) and Training College.

In view of the large numbers in our Elementary School classes and, to some extent, the necessarily varied experience of the children, it is not advisable to attempt to lay down rules for carrying out instruction in the higher classes. It would seem as if, while the first stages of the Nature Study course may be in the hands of all capable teachers of Nature Study, the later stages would be better in the hands of specially-qualified teachers (members of the staff); for though, so far as knowledge qualification is concerned, the work embraces such information as every man and woman should have, it calls so much for personal efficiency and tactful treatment, that it would be ineffectual, if not injurious, in the wrong hands. I do not suggest "sex specialists," any more than I would suggest "sex studies," named as such, should occupy a place in the curriculum; but I do suggest that capable teachers of Nature Study, Literature, Civics, Physiology, Hygiene, and Scripture, should so arrange, deal with, and select from their subjects that each yields its contribution to the composite whole—Sex-education.

EDUCATIONAL HANDWORK

(With Special Reference to Training Colleges).

(Read at the Conference of the Training College Association).

BECAUSE I have to speak on *Educational* Handwork it must first be taken boldly out of the setting of School time-tables and College limitations, out from the walls of a conventional room—into the open air, and plunged back again where it ought to be—where it *has been in its vitality*, all along, into the stream of life—for it is "life that educates."

Will it not be wise, in the first place, to recognize it as one of the great tools that man has used in the making of himself?

In the early days of the race, in the work of mission fields to-day, in the education of the negroes (Hampden and Tuskagee show us), in the twentieth century, man still learns much through the hand. But this tool with which man helps to make himself is *double-edged*. Rightly used, it brings out a deeper, richer self, giving him a more intimate knowledge of himself, helping him to possess himself more fully; wrongly used, it degrades and stupefies, wearing away to a smaller, poorer self, of which the labourer in this industrial age is the type, the worker bearing no responsibility, having no joy in finished work, no warm sense of possession—only having the ability to work blindly, dumbly on—on *someone else's pattern*, having no stimulus to quicken the torpid mind. The product of a slave race which, for 150 years, had been working unceasingly, during waking hours, was a sorry one. When the Southern States of America yielded to the Northern demand, and gave the rights of free men to its slaves, what mean citizens they were! These workers had been working with *the hands alone*, with no co-operation between mind, will, and hand. *This type is easily manufactured to-day.* Boys and girls in the schools, drilled through a course of models or specimens, are in a fair way to becoming of no worthier type; work divorced from real life, undue time over specimens made for practice alone, rarely kindle enough interest in the immature worker's life to promote courageous, self-initiative effort. It will be well to examine this tool, with our students, before we use it, carefully recognizing its double-edged characteristic. The ready mind to appreciate life as it was and is; the eye, not of the specialist, but of the common-sense worker in the great workshop of the world and time; the general experience, rich in human interest, will be the safeguards we need in using it.

We can get much suggestion as to the place handwork takes in life from a rapid review of man as he gains a mastery over environment; from his crude uncouth endeavours; through his growing power of selection, the choosing of a suitable material, abandoning *this* for a better, capturing not only stick, stone, rock, fibre, but wind, water, the great forces; learning through necessity to minimize labour; learning through intelligent effort to improve the tools he used so laboriously as an individual, so that they may do the work of many men in a fraction of the time needed before, economizing time and mechanical effort through all these stages, till at last we see him realizing the wisdom of becoming social, and through that, growing into an efficient member of society.

But along with this progress certain elements healthful to the life of man were left behind, undue specialization crippled intelligent effort, extinguished the joy of creation, proportions were lost, the conception of the gradual unfolding, of the *becoming*, so needed in this modern ready-made life, were forgotten. Things were taken for granted, the *human* touch was lost. *So far from man finding himself, man lost himself under the exaggeration of the very elements which made in the first place for his development.*

Is it not advisable to present to our students *very gravely* some of this history, so that they may realize the vitality running intimately through the handwork they offer themselves, as students now, and as that for which they will be responsible as teachers, later ?

It is true that the child to-day asks for scissors and a knife, and the student loves to examine machinery ;—in details we cannot force back the ages—we rejoice to be so far on, but some characteristics are so firmly woven into the mesh of life that we *must* take account of them, or in our own little span of weaving we shall tear and wrench irrevocably.

What are some of these characteristics ? From the cave and primitive dwellings, to the modern house, stretches a great period of time, crammed with experiment and advance. The fresh element of adventure breathes in the record of the practical working of the hands, new ideas of construction arise, new conditions lead to new modifications, there is little room for unintelligent success,—*the intelligent failure helps the fellow-worker, and the son of the fellow-worker, immeasurably more than the unintelligent success.*

We are too much ashamed of our mistakes, we cover them up too soon, instead of looking at them as opportunities for betterment, pride or fear blinds us, and we see in failure—senseless finality ! It is by boldly looking at the mistake in a detached way, impersonally, that we learn. *Never mind who* made it, oneself or somebody else, *always mind why* it was made and the conditions under which it was made. An apparent failure often turns out to be the promise of further achievement and purpose ; the crumpled leaf bud expands, if *only* it has room given it, into the smooth green vitally-breathing surface. There is a superficial judgment upon work, and consequently a false shame over mistakes that has to be recognized. Our students must go out knowing this, and knowing this, they will at any rate be on the road to becoming competent themselves in adjusting the measure ; and, as far as in us lies, we have to enthuse them with the courage to bear such failure, because it often leads to a truer progress later.

It often happens that in our handwork, demonstrations, and class-work in the schools, we cannot see the final effort ; it happens that we have only time to suggest, and we leave the matter so that the children shall either work the problem out at school with the form teacher, or at home, by themselves. We leave with " Please send me the results : I want to see what the children make of it." But now post cards come instead of parcels—" The children were interested, *but the models were not good enough to send.*" Not good enough to send! But it is always " good enough " as an index of the worker's mind and character ! As an *end* it is *not* " good enough," but as a *means* it is evidently sometimes *too good* for the unintelligent examiners of handwork to interpret ! It is this isolation of handwork as a subject, with no conception of the significance the model bears to the contents of the worker's mind, no inference of what has gone before, and no suspicion of what may come after, that make for deadness and futility. We have not yet really put into practice our conception that handwork is self-revealing. We do not spend time over *reading* the work; it is still on essays and exercises—*book revelation*—that we give untold hours of conscientious scrutiny. We do not spend a twentieth amount of time over reading the children's models, thoughtfully; we are too busy to let them speak to us of their creators.

Can we not with our students arrange for experiment, individual modification? Can we not pool the result of endeavour in the classroom, and start again, so that there is real vitality in the fact that "we are members one of another"? Can we not in this connexion discuss the place of the working plan, the possibility of leaving room for modifications even while the worker is carrying it out in material, the test always being, "*Is there room to grow?*"

There is one more instance of the isolated treatment I should like to speak of—the curious barrier set up between hand and bookwork. Our students must realize that they can be often a mutual help. There is little time to deal with this in the training year, but even if two or three times in the course they are asked to bring up books dealing with a certain subject, to be illustrated in material, it will certainly serve to "open the doors." Perhaps that is really all we can do, after all; to be of any good, each one must enter in for himself—that is a matter of time. But it *is* possible to ask, for example, that students should bring with them to the next class illustrations, descriptions, books with the markers ready placed, dealing perhaps with Norman castles, or life among nomadic peoples. These are placed on a reference table, and the workers, after discussion, start on their job. To and fro, from reference table to the working bench; up and down, from rude sketch, or brown paper pattern, to the pages of some edition of social life—the scanty hour for handwork slips away, and there is little to show, hardly anything has been accomplished. The time in college is too short for achievement, or for the filling of show cupboards; but another door has been opened, through which the student may step later, of his own free will, taking his children along with him. In this way handwork will, in its broader setting, promote the colour and warmth of the civic, history, and geography lessons.

A further "feeling" for handwork may be given to the older children in the schools, and should, therefore, be presented to our students in training. It is in the presentation of the history of the craft. There is a very rich field to work over here. We shall find the very elements in the guilds of mediæval times which appeal so strongly to the adolescent workers in the schools, with their sense of loyalty and love of organization. Here the boys themselves anticipate the very problems, and face, in a very similar way, the difficulties of the workers of other times. The motto of the old craftsmen is good hearing for these children of V, VI, VII Standards, and for our own students, too—"Let all share the same lot; if any misdo, let all bear it."

Pictures full of life, colour, and sound may be given of London in those days when the city made everything for itself: the silk weavers of Spitalfields, with their singing matches; the sturdy harness-makers of Paisley; the Bedford lacemakers may be introduced, and made friends with; a look into a weaver's shed here, or a "cropper's shop" there, will be full of interest; the history of the day of a "draw boy," or one of the young children known to Mrs. Browning, will provoke all kinds of eager questions, and often lead to an inquiry into the state of things to-day. The history of invention opens out, a fascinating one enough, and the attempts of John and Robert Kay, Hargreaves, Arkwright, Crompton are exciting indeed.

In some simple ways we may even arrange for a little adventure in invention ourselves. A school is a miniature world to adventure in, if only the children and students will travel about; the opportunity is always there, but we do not take advantage of it. *We are insular in our small schoolroom*, while all the time the whole school world is open for us to voyage in! How many VI Standard children know what their little sisters and brothers are doing in Standard I? How many babies have the chance of seeing what "the big ones do"? I have tried to conduct a few parties (very much, perhaps, on polytechnic lines, because *time* is so limited) in this way. I have taken a set of twenty Standard V or VI boys and girls to see in their own school the babies weaving with thrums, on their little primitive looms. We notice that the patient babies go quite happily "over one, under one," line after line, picking up the same thread lower down on the mat, as many as thirty to forty times, quite contentedly. It is the right thing for the babies, a healthy enough exercise, so long as the four-edged loom is big enough, and the strands far enough apart; but how should the method strike our older children, who have so soon to make the best of things in the world, to be economical in time and effort, so soon to learn to get the maximum result with the minimum of expenditure? Here is the handwork teacher's opportunity: "Think of some way by which those threads may be held up permanently; experiment on a rough frame of your own making." As a result we get a lathe of wood run in, holding up alternate strands, and the "shed" arrives in its simplest form; it is not long before a shuttle follows. This comes of voyaging, stepping out to see the world.

Students should also have had some opportunity to gauge each other as workers, and this can only be done if we arrange to have some form of group work sometimes. It may work out in connexion with the Norman castle or geography scenes, already spoken of; it may take the form of simple bookbinding, where a few mend and sew, and others prepare the backs and press. The danger of specializing is not great, for the books are finished in the same room, perhaps at the same bench, and people are encouraged to "change parts" sometimes.

Finally, the rhythmic quality of some work must be noted. It is not only in its stimulating character that man needs handwork in his life: the restful element is needed, too, and although this is particularly desirable for a certain type of child, it is necessary for all to have a period when quiet, rhythmic activity is provided. Plaiting, sewing, knitting, are helpful agents in balancing the excitable child. The social element immediately makes itself felt; here, released from the strain of working to somebody else's time, free from the anxiety to keep up with the others, the worker is happy enough to talk to his neighbour. To keep some basket work, bast stitching, plaiting, knitting, on hand, to give whenever suitable, may often avert an irritable nerve storm. The rhythmic action of the hands helps to restore harmony, and the harassed or nervous child finds his happier, better self again. Our students should know how to start, and use, and keep always at hand, some activities of this type; they should understand the peculiar value of them before they attempt to deal, day by day, with the varying temperaments of fifty children, in fifty different moods.

The rhythmic character of some kinds of handwork naturally finds expression in song; yet it is not often that it occurs to the students or teachers to allow it! We are fortunate in having in the schools now plenty of our own healthful old national songs, but they are actually sung with listless arms, and quiet feet, as the children stand in neat rows on the hall floor. To some of us it is almost impossible to keep still while the swing and lilt of the tune of "Strawberry Fair" and "Raggle Taggle Gipsies" is heard, yet these young singers are motionless! Let us use the songs boldly, gladly, as the stitching and weaving go forward, for singing helps to promote joy, and even in the twentieth century, in the Training Colleges and Council Schools, we *must find time to rejoice.*

We may introduce the students and children, too, to some of the songs of the old workers, those who felt the dignity and honour of hand labour. These asked for a blessing on the work of their hands; the Master of Life, the Great Worker, would make fruitful the long day's labour, if it were wrought in sincerity:

"And bless, O God, the handling of my hand,
What time I rise in the morning early,
What time I lie down late in bed."

To sum up—there are many values, outside the purely pedagogic one, in our vision of handwork. Let us put it back into life, among the true workers, and learn from them, rather than from the graded list books of academic worth. Let us be simple, direct, and quite honest. We suffer through straining at purely scholastic values; it is because we have so foolishly cut the various aspects of life into small enough bits to fit a square in the time-table, that we felt the need of co-relation; now that has become such a fetter that we have had to break it away in order to save our souls alive. Can we get to the simple outlook, full of vitality again? The time our students spend in training is short, for handwork, perhaps but an hour or so a week. Shall it be spent in systematic training in one or two materials to exclusion of the wider vision? Is it not our business as trainers largely to open doors? Shall we not be doing the wiser service in showing the possibilities, by imbuing, if we can, the student with that feeling for work with the hands which will make it *impossible* for him to disentangle it from the activities of school life, and better still, the wider life outside? Can we not enthuse him, so that later he will give of his leisure—(he will have more, as a settled teacher, than as a temporary student)—and in its true meaning (this is the word I want here), he will give of his leisure to specialize here or there as he chooses, making himself a worthy craftsman, building upon the larger experience, and enriched by the wider vision he has been granted? It is not for us to say, perhaps—we are too immediately doing our work to know whether it is this or that which shall prosper—but we must see to it that we have room to grow, and a far horizon beyond, both for ourselves and the students who work with us.

REPORTS OF MEETINGS.

I. PRINCIPALS OF TRAINING COLLEGES.

A Meeting was held at the London Day Training College on Monday, January 6th, Professor J. A. Green in the chair. The following resolutions were passed:—

1. FAILURES IN CERTIFICATE EXAMINATION.

Resolved—

"That the Board be asked to consider favourably the possibility of referring all cases of possible failures in the Certificate Examination to the Principals concerned before they are carried into effect."

2. THE DRAFT REGULATIONS.

Resolved—

(1) "That the attention of the Board should be drawn to Article 18 (b) in the Draft Regulations, and that the Board should be requested to leave the matter therein referred to, to the discretion of the Colleges concerned (the words 'subject to . . . ' to the end should be deleted)."

(2) "That this meeting welcomes generally the Draft Regulations as on the whole increasing the freedom of the Training Colleges in dealing with the curriculum."

(3) "That in the view of the Principals the insistence of previous examinations in French and German is likely to be detrimental to the study of modern languages."

3. COLLEGE AND HOSTEL GRANTS.

Resolved—

(1) "That the attention of the Board should be called to the inadequacy of the Grants for Women's Colleges and Hostels, and that the Board should be asked to increase the Grants in this case by at least £5 per head."

(2) "That, in view of the largely-increased expenses and responsibilites of Training College administration, the time has come for a favourable revision of the Grants to all Colleges."

II. TRAINING COLLEGE ASSOCIATION.

The Twenty-first Annual General Meeting of the Association was held at the University of London (in connexion with the first "Conference Week of Educational Associations"), on January 7th, 1913.

Morning Session.

Professor J. Adams, President, in the Chair.

(1) The Minutes of the last Annual Meeting were read and confirmed.

(2) The Annual Report and Balance Sheet for 1912 were adopted. It was decided to refer the matter of the deficit to the Committee to deal with.

(3) Mr. D. Harris and Rev. H. Walker were appointed Scrutineers of the Voting Papers for Vice-Presidents.

The President for 1913 (Professor J. A. Green, of Sheffield University) here took the Chair.

(4) Hearty votes of thanks were accorded :—(*a*) the retiring President, (Prof. J. Adams) on the motion of Rev. Canon Stevenson and Rev. S. Blofeld; (*b*) the retiring Vice-Presidents (Miss S. Walker and Prof. J. A. Green), on the motion of Rev. Canon Dennis and Miss Dunlop; and (*c*) the Hon. Secretary (Mr. H. E. Griffiths), on the motion of Prof. J. Adams and Rev. Dr. Workman.

(5) The President then delivered the Presidential Address. (v.p. 43)

(6) The following elections for 1913 were declared :—

Vice-Presidents :—

Miss C. Graveson, Goldsmiths' College, New Cross.
Rev. Canon Stevenson, Training College, Warrington.

Hon. Secretary and Treasurer :

Mr. H. E. Griffiths, St. John's College, Battersea.

(7) A discussion on "The Staffing of Schools in relation to the demand for, and the supply of, trained teachers" followed, opened by Rev. Canon Dennis, and Mr. J. L. Holland, Director of Education for the County of Northampton.

The Rev. Canon H. Wesley Dennis, the Principal of St. John's College, Battersea, urged that the first question which must be answered before any satisfactory progress could be made with the various problems affecting the Training Colleges was, "How are you going to staff your Elementary Schools ?" Present difficulties were owing in no small measure to the want of a comprehensive national policy which should be framed by the Board of Education and submitted for the approval of the nation; comprehensive because the tinkering policy of recent years had proved fatal, national as recognizing and encouraging every agency whether school or college which, provided always that it was efficient, would bring freshness, originality and enthusiasm to a common national work.

The policy of tinkering had practically destroyed the pupil teacher system without providing any adequate sources of supply; it had encouraged Local Education Authorities to build out of public money beautiful Training Colleges without any reference to national needs or attempt to fit in with a national system.

As far as Training Colleges were concerned the situation created by the present haphazard policy was briefly this, that since 1903 the accommodation for the supply and output of trained teachers had been doubled, while the supply of candidates for the Training Colleges had been halved.

The Board of Education returns, 1904 for 1903, show 14 University Colleges turning out 1,682 trained teachers, and 44 Voluntary Colleges turning out 4,930 trained teachers, or a total of 58 Colleges turning out 6,612 trained teachers. In the returns 1912 for 1911 there are 17 University Colleges turning out 2,954 trained teachers, 44 Voluntary Colleges turning out 5,463 trained teachers, and 17 new Municipal Colleges turning out 3,138 trained teachers, a total of 78 Colleges turning out 11,555 trained teachers. These figures do not include large increases at Leeds and further additions which will be made in September, 1913, by the opening of a new College in Hull.

On the other side, what of the supply of candidates for entrance? In 1906-7 there were 11,901 pupil teachers in England and Wales; in 1910-11 there were 6,021 bursars and pupil teachers combined. The figures for 1911-12 were not yet available, but private inquiries showed that a further shrinkage had probably taken place everywhere with the exception of a few privileged localities.

It was therefore perfectly evident, that unless some remedial measures were taken, and taken soon, there would be many empty places in Training Colleges, a serious shortage in the supply of trained teachers for the schools, and a grave set-back to the progress and efficiency of Elementary Education.

What were the causes for this most unsatisfactory state of affairs? The main cause was the want of a definite and comprehensive policy in regard to the staffing of schools.

(1). Because the Board had no policy they had seen an immense multiplication of Training Colleges and trained teachers without any steps being taken to secure or encourage their employment; hence an overstocked market for three years, followed now, and naturally, by a great falling off in candidates for training. Many urged that it did not pay to be trained. "Why give up a post to enter college without guarantee of another on leaving? Why not save your money, earn a salary, and take the certificate examination at the same time?"

(2). There was the "boom in trade," the new openings in Government Service, and the general rise in wages and conditions of life, and yet the teachers' prospects were by comparison stationary, the work exacting, and the recognition, apart from salary, scanty and grudging. It was gravely significant that some of the daily papers commenting on the success of the boy who won the King's prize at King's Lynn School expressed surprise that he hoped to become a teacher.

(3). The practical abolition of the pupil teacher system had cut off a valuable source of supply from the country schools, severed the connexion between the head teachers of the Elementary Schools and the promising lads and lasses who looked forward, often with a very deep sense of vocation, to the work of teaching as the work of life.

These young men and young women were in touch with their scholars, in sympathy with their difficulties, and had as teachers exercised an influence in the schools, for which the country owed them a deep debt.

What was being done to remedy matters? At present nothing but Circular 805, a poor teacup with which to bail out an ocean of trouble! It aimed at regulating the output of teachers, but did nothing to secure a supply of candidates for the profession.

Nothing would or could be done until an exhaustive inquiry was held and the whole question of demand and supply dealt with, on the results of which a comprehensive and definite policy must be framed.

Such an inquiry must include the following vital questions:—

I. How are the Elementary Schools to be staffed? With trained or untrained and certificated teachers? or with uncertificated and supplementary teachers? or with all kinds? If so, in what proportion?

Significant figures published in the Handbook of the National Federation of Class Teachers showed how small a proportion of educational authorities reached even a reasonable ideal in the staffing of their schools.

II. After settling this vital question the next point should be, What is the provision for supply? Now? and in the future according to estimated needs from time to time?

This calculation should be national and all-embracing, not local.

III. The supply of candidates. This, again, must be a national concern; all authorities must share in the work. To avoid parochialism it was most important (1) that bursaries or exhibitions to encourage training should be given without restriction as to choice of college; (2) that fullest opportunity and encouragement should be given to the boys and girls of country schools to qualify for the teaching profession.

IV. No inquiry could be satisfactory which did not also consider most carefully the prospects of the profession and conditions of service; seek to remove difficulties and encourage the best of our young men and women to take up the profession of teaching as one of the highest and noblest forms of national service.

The following took part in the discussion:—Rev. Dr. Workman, Rev. Canon Stevenson, Miss Forth, Rev. D. J. Thomas, Mr. Harris.

The following resolution was proposed by Rev. Canon Dennis and seconded by Miss Dunlop:—

"That in view of the serious condition of affairs, the Board of Education be urged to hold immediately an exhaustive

> inquiry with the object of framing and declaring a definite and comprehensive policy on the Staffing of Elementary Schools and the consequent demand for, and the supply of, trained teachers."

This was carried unanimously.

Afternoon Session.

(1) Reports of the Sectional Meetings (held the preceding evening) were made by (*a*) Rev. R. Hudson, Chairman of Meeting on "Educational Handwork"; (*b*) Prof. J. A. Green, Chairman of Meeting on "Personal Hygiene, with special reference to the approach towards the teaching of sex in schools."

(2) The following report of the Representative Sub-Committee on Board of Education Circular 805 was read:—

> In accordance with the instructions of the General Committee, the Representative Sub-Committee have carefully considered Circular 805. They have circulated a Memorandum thereon to the Principals of the Training Colleges, and analysed the replies to the questions contained in the Memorandum.
>
> They recommend that the Memorandum and Analysis of Replies be sent to the Board of Education with a covering letter emphasizing their opinion:—
>
> (i) That in view of present circumstances any action taken with reference to the proposed date of the entry and output of students should be tentative and experimental, strictly limited in extent, and voluntarily undertaken.
>
> (ii) That in any such change, the College or Colleges volunteering to try the experiment shall be assured by the Board that they will arrange for the Final Examination of their Students, or, if an alternative examination be taken, defray the expenses of such examination.
>
> (iii) That the Board shall undertake to deal generously with any temporary financial difficulties which may be caused in carrying out such a change.
>
> The Representative Sub-Committee wish to call special attention to the fact that a change to Christmas means a very short interval between the normal conclusion of the year of bursarship in July and entrance at Christmas, and to record their opinion that previous teaching experience of less than six months duration should not, as a rule, be regarded as sufficient preparation for a course of College training.

The report was adopted *nem. con.*

It was decided to send a copy of this report, together with a copy of the analysis of the replies to the Memorandum, to each Principal with a request that it be brought to the notice of the Governing Body of the College. It was also decided to send copies to the County Councils Association and the Association of Municipal Corporations.

(3) A discussion on "The work of the Student-Teacher Year" followed, the openers being Miss Walker, Miss Wodehouse, and Mr. Parsons. The following took part in the discussion:—Rev. Canon Stevenson, Rev. Canon Dennis, Mr. W. Loring, Miss

Luard, Miss White; and it was eventually decided, on the motion of Miss Luard and Miss Graveson, that the Committee should take steps to bring about a conference on the subject with representative Heads of Secondary Schools.

The Registration Council is about to appoint Ten Committees, each representative of one of the kinds of technological or specialist teaching mentioned in the Order in Council, dated February 29th, 1912, and has therefore asked the Secretary of the Association to obtain nominations for three places by February 28th. The Representative Sub-Committee met on February 14th to deal with this matter, and agreed to nominate for a year the President and the two Vice-Presidents of the Association, and to bring up the question of the nominations for the following year (if such nominations are required by the Registration Council) at the next annual meeting. The President informed the Sub-Committee that Professor Welton had been nominated by the Teachers' Training Association to serve as one of their two representatives, and asked to be allowed to withdraw his name in favour of that of Canon Wesley Dennis. This was accepted.

REVIEWS.

"**Life and Work of Pestalozzi.**" By J. A. Green, M.A., Professor of Education in the University of Sheffield. (pp. viii+393.) W. B. Clive. 4/6.

"**Pestalozzi's Educational Writings.**" Edited by Prof. J. A. Green, M.A., with the Assistance of Frances A. Collie, M.A. (pp. xii+328.) E. Arnold. 4/6 net.

STUDENTS both of the history and of the theory of education are well aware of the debt of gratitude they have for some years owed Professor Green for his lucid and concise summary of the *Educational Ideas of Pestalozzi*. For, as he truly says in his Introduction to the second of the two books on our list, "Pestalozzi's principles were . . . too fundamental ever to form a school of practice. He stands outside and above party. His ideas are the very breath of all later idealistic and practical educational work" (p. 14). To some extent—indeed, to a very great extent—English readers unfamiliar with German have had to accept this on trust, when they have accepted it at all. And even those able to read German fluently have not always found it easy to recognize the deep wisdom and fundamental truth enshrined in writings so unsystematic, so exuberant, and in places so formless, as those of Pestalozzi. In each way Professor Green has come to our assistance. In the *Educational Writings* he gives us a carefully made selection of the chief writings on theory, condensed where the originals are redundant, and rendered into admirably clear English; while in the *Life and Work* he gives yet other translations of the more practical writings, and that critical synthetic exposition without which we are so apt to lose what it is most important that we should secure. For, unlike Herbart and Frœbel, Pestalozzi wrote no formal treatise on education, and it needs an educational philosopher to act as a competent guide through the many treatises, pamphlets, and letters, through which his message is, piece by piece, delivered. We know of no English thinker so competent to perform this task as Professor Green, and we thank him most heartily for having done it so excellently.

The *Life and Work* is a very careful revision and a judicious enlargement of the *Educational Ideas*. We have collated the two works line by line, and we have been impressed with the care with which small changes have been made in order to present the thought more clearly. In a few cases, however, the former foot-note references have not been adapted to the new paging. That these may be corrected in the next edition we give a list of those we have noted—on p. 106, the reference should be to p. 214; on p. 240, Note 1, to pp. 183 and 346f; on p. 280, Note 1, to p. 364; on p. 337 reference to p. 214 should be added. In addition to verbal alterations, a great improvement is made by printing the *Letter from Stanz* in its context instead of in an appendix, and by including the more detailed parts of the old Appendix III in the body of the text. A more systematic division into chapters also adds to the facility with which the relations of part to part and to whole are apprehended.

In "Part I—Biographical" the most noteworthy addition is the series of extracts from Pestalozzi's diary dealing with the early education of his son. These are especially interesting in showing how far Pestalozzi was from being a disciple of Rousseau in the fundamental conception of all true training. Pestalozzi sees the difficulty of reconciling obedience and liberty, but instead of shirking it with Rousseau he sets himself to find a solution, and, indeed, this search is one of the main lines of his efforts throughout his life. He never doubts the necessity of obedience, however much he may be in doubt as to the manner in which it should be secured. "Where am I to draw the line between freedom and obedience?" he asks (p. 39). He is clear that in "the lesson hours . . . the boy himself must not imagine it possible to escape from this duty" (p. 38). Moreover, the child must early learn self-control, for "he who has learnt to restrain his desires may rise to complete self-conquest" (p. 38). Further, "So far as your children must be restrained in order to prepare them for the duties of social life, let this restraint be absolute" (p. 38). Enthusiastic admirer, therefore, as he was of much of the *Emile*, his own vivid consciousness of the reality of life and of duty kept him safe from the negation of purpose and effort which is the very essence of Rousseau's doctrine of life, and, consequently, of education.

Other welcome additions in this Part are extracts from the *Schweizerblatt* (pp. 61-62) and from the *Fables* (pp. 66-67). We are not sure that the additional translations given in Part III would not have been more conveniently included in Part I, each in its own context in the Master's life, though on such a point we should hesitate to set our judgment against that of Professor Green.

More alterations are made in "Part II—Expository" than in Part I, and they all make for insight and comprehension. The first chapter (chap. vii) is new, and gives a clear and connected statement of Pestalozzi's fundamental principles. Important additions are made in the treatment of "Intellectual Education," especially in chap. xi, which is largely new, and less important ones in chap. xii on "Practical Education." Little change was found necessary in the chapter on "Moral Education" (xiii), or in that on "The Science of Education and the Training of Teachers."

The rendering of phrases containing *Anschauung* is, as Professor Green points out (p. 103), difficult. Is not the difficulty increased when different English equivalents are given both in the text and in the index? "Observation," "Spatial Experience," "Sense Perception," all occur, sometimes two of them on the same page" (*cf.* p. 344).

In the chapter on "The Influence of Pestalozzi" (xv), we do not think the relation to Frœbel is adequately dealt with (pp. 271-2), though, with what is said, we are in hearty agreement.

Finally, would it not be better to use such terms as "monk" and "New Learning" precisely? Neither Augustinian canons (p. 13) nor Capucin friars (p. 70) are monks, and the phrase "The New Learning" in the sixteenth century did not denote humanism, but the novel doctrines in theology, economics, and politics associated with the Reformation. The recent common misuse of this latter term is obviously unfortunate and misleading in estimating the attitude of sixteenth century writers to the Revival of Letters.

For the translations in the *Educational Writings* we have nothing but praise and gratitude. Personally, we should have liked more of the *Enquiries*, and we would gladly have exchanged the thirty-first of the series of the Letters to Greaves for the thirteenth, with its interesting criticism of Locke's peculiar statement of his views as to the attitude of parents towards their children. However, no two people ever agree in the exact choice of any body of selections, and Professor Green has given us what is necessary for a thorough-going appreciation of Pestalozzi. And what a great soul he was! What a true insight he had into the meaning of life and the realities of education! And it was because he lived and felt that he was so great and saw so truly. No detached intellectual analysis his, and thus his work was not to found a system but to inspire a spirit. That spirit does not take kindly to bureaucracy, nor bureaucracy to it. Well is it to ponder on the wise words of the Master (pp. 204-207), and to find in them the reason why the more schools are believed to monopolize education the less they are able truly to educate. "The first object of national education should be . . . to make parents realize that . . . the education of their children is primarily their concern."

Professor Green's sectional headings in the *Writings* are very helpful to the reader. May we suggest that they would be still more helpful were they also printed together at the beginning so as to form an analytical table of contents which one could easily grasp as a whole! J. WELTON.

"London Day Training College. Syllabus in use in the College Demonstration Schools, 1912." 69 pp.

Professor Adams and his colleagues have done substantial service to constructive pedagogy by the issue of this syllabus, which presents a curriculum for children of elementary school age (8—14).

The first year is given up in the main to the acquisition of the elements of arithmetic and geometry and of facility in reading and writing, but five hours a week (4 periods of 1¼ hours each) are devoted to a general course, designed to promote training in language and to provide a broad structure of experience as a basis for future differentiated lessons in English, History, Geography, &c. Man's primitive social conditions are reproduced as far as school conditions and the children's aptness in entering into make-believe situations will allow, and the problems which arise are worked out.

The actual arithmetic suggested for this initial year strikes us as unnecessarily "detached"—the first three rules and simple problems arising out of them, of the type that is common in the early stages of the subject. "Sticks," single and in bundles of ten, form the concrete basis of this work. (We note by the way that this syllabus is couched in different terms from the rest—this and this *should be* done—as if it were a counsel to many schools and not the practice of one.) The idea of measurement which is the foundation of number is not suggested, except under geometry, and here its relation to the arithmetic is not clearly indicated. We might have expected to find the motive for the arithmetical processes given by the activities of the "general" course or by the geometry or by both. On the whole, the work of this first year for children of 8 + seems to make very slight demands upon them. This may, of course, be due to the exceptional circumstances of the school.

In the second year (children of 9 +) and later, the syllabuses of each subject are set out at length. The work is arranged in half-yearly stages, and, after the third year, by an ingenious arrangement of parallel courses, two promotions a year are possible, according to the peculiar abilities or needs of individual children. The detailed syllabuses of each subject are obviously the work of different hands, and something in the way of unity and coherence is perhaps lost as a consequence. The arrangement of the syllabuses, whilst convenient for the specialist interested in his particular subject, is a hindrance to its study as an organic whole. Criticism is, however, easier than construction, and such points of detail as seem to us to fall below the ideal, do not detract from our warm appreciation of the thought and labour which have been given to the work as a whole.

In Stages 3 and 4 (i.e., in the second year of the course), the English consists of Robinson Crusoe, selected stories from Thompson Seton, and selected poems. Here, and throughout the courses, two aspects of English—linguistic and literary—are carefully distinguished. The story course up to Stages 9 and 10 serves as an introduction to literature and the basis for exercises in written and oral composition. Here we confess to a difficulty. Does not the *practice* of requiring children to reproduce, orally or otherwise, the stories they read or hear lead to an unfortunate attitude of mind? They listen to the stories, knowing what will presently be required. It is this which gives the motive to the lesson, and may not this be subtly destructive of true appreciation? In the early stages of the school course is there any reason why History (so-called) and English should be differentiated? Here, these nine-year-old boys do Greek and Norse legends under the name of History, and Robinson Crusoe under the name of English. Robinson Crusoe is to be orally reproduced, the legends or parts of them are to be dramatically represented. It is because we think English as such suffers greatly by isolation that we join issue with the scheme at this point. Much the same holds good of Stages 5 and 6, where the stories of Arthur's Knights are called History, but the Arabian Nights and Browning's Pied Piper are Literature.

The arithmetic of these boys (Stages 3 and 4) seems to us to move on slowly, though the pace is quickened enormously later. Space forbids the close examination of this interesting document. Perhaps the most suggestive courses are those in Science and Mathematics, though the Geography scheme has many admirable features. We hope to return to these later.

We do not know whether the syllabus is on sale; if it is, it should have a wide circulation amongst the head masters of our Primary Schools, and all Training Colleges should possess a copy. J.A.G.

"**The Psychology of Educational Administration and Criticism,**" by F. H. Hayward, D.Lit., with a Preface by Professor J. Adams, LL.D. (xiv + 592 pp.), Ralph, Holland & Co.

Dr. Hayward is already well known by his vigorous writing on educational subjects. Whether or not he carries us with him in his judgments, he usually interests us and sets us thinking, and this new book is no exception to the rule, in spite of a rather cumbrous and not very clear title. It should be said at once that Dr. Hayward uses the term psychology as a novelist might use it, and not as a scientific term. When he writes about the "Psychology of Complete Detachment" and the like, he is only entering upon a series of lively attacks upon the authors of the Holmes Circular. There is no psychological analysis such as one might expect from the chapter heading, &c., and one wonders whether it was really worth while spending so much admirable energy in a process very like that of slaying a dead horse.

After fifty pages more or less relevant to the Holmes Circular, there are five chapters devoted to Studies in Egoism. Interesting as they are, it is not quite clear what the author means by egoism. On one page he tells us it is "cocksureness," on another that it is "jealousy," and again he says "Egoism is neither selfishness nor unselfishness, neither sin nor goodness, though it may become one of these. Egoism is egoism"—recognized by Buddha as the root of most human ills, denounced by CHRIST, and discovered recently in literature. Egoism is a "mighty, lustful force, incarnate in every man." "It is not an acquirement but an instinct." Dr. Hayward writes so rapidly that we can not fairly expect him to be consistent. Is jealousy neither good nor evil? Are we—*all* of us—cocksure by instinct? Does not Dr. Hayward often confuse an innocent primitive emotion with degenerate forms? It is as if he said men were cowards by instinct because the emotion of fear is inborn. Surely there are many egoists among adults who are incapable of jealousy. We are almost persuaded to put Dr. Hayward himself into that category. He is, if one may say so, almost egoistically open minded, and surely he is very conscious of his own place in the van of educational thinking—"we futurists," as he writes of himself, are egoists of such *naiveté* that we should indeed be poorer for their absence.

These chapters on Egoism are rich in illustration of the mischievous tyranny of the point of view, whether it be that of parent, or churchman, or lawyer, or the educational official. It is, however, surely regrettable that so much is said in such strident tones—a regret one feels even more strongly in Part III of the book which is entitled *Studies in Educational Opinion*. Much of it is in a form of controversy which we are glad to think rare in this country—the form which rouses sympathy for the people attacked and blinds us to the rights and wrongs of the particular case.

There follows a chapter on Educational Statistics, in which the atmosphere is calmer. It is very clearly written, "probably the best and most complete popular exposition" of the subject, in the opinion of Professor Adams. But it is in Parts V and VI that the chief value of the book lies. Here we have much sound criticism of things as they are in the world of education, and many interesting suggestions for their improvement.

It is perhaps impossible to sum these up satisfactorily in the limits of a paragraph. Dr. Hayward has clearly drawn much of his inspiration from the *Republic* of Plato, for his schemes would bring the whole spiritual environment within the control of educational officials. A new censorship is to be established who shall take care that our future citizens shall "not be reared amongst images of sin, or upon unwholesome pastures, culling much every day by little and little from many places, and feeding upon it until they insensibly accumulate a large mass of evil in their inmost souls." Theatres, Music Halls, Cinematographs, Picture Posters, and the Contents Bills of weekly papers are all to be brought to the judgment seat occupied by educational experts. They are to pronounce, not upon the legality of this or that, but upon the effect it is likely to have upon the minds of the immature.

The officials upon whom such wide powers are to be conferred must not be lulled into carelessness or bureaucratic officialism by the life tenure of their posts. The present despair of thousands of capable class-room workers, the secure indifference of so many of their official superiors, is to be overcome by a rotation of offices. Leaving aside the obviously incapable, the class teacher will take his turn as head master, and the head masters their turn as administrative officials. They will know all the time that in due course they will return to the less showy but most important work of teaching. Incidentally, the question of whether or not head masters are necessary is raised. Dr. Hayward has missed the fact that in Zürich the term and the office are alike unknown. In that city very large schools are managed by the actual class teachers, who elect a chairman and correspondent each year. He has no authority, but is the medium of communication between "the office" and the school.

The psychologist is to play a great part in the educational system of the future, as our author sees it. He is to be, amongst other things, the source of testimonials, to estimate the native intelligence of pupils and of teachers, to prescribe or to evaluate methods of teaching, and generally to advise the official at every stage of his work. A critic would perhaps be excused from inquiring whether these advisers would be protected by anonymity, or by the life-tenure of their posts? Until egoism, in what seems to be Dr. Hayward's sense, is entirely suppressed, it would, we imagine, be almost necessary to afford such guarantees, at any rate, until our psychologists can write an equation to their subject as objectively as a mathematician can write it to a given curve.

There is so much good matter in this book that we hope it may be widely read, although its bellicose manner and its undue length must, we think, detract from its influence. J.A.G.

"The Essentials of Mental Measurement." By William Brown, M.A., D.Sc. (vi+154 pp.) Cambridge, at the University Press, 1911. Price 3/6 net.

"ALTHOUGH written primarily for the professed psychologist," the author hopes "that the book will also prove of use to the educationist." In common with other psychologists, he believes that, "now that a real training in psychology is beginning to be regarded as an essential part of a teacher's equipment, we may expect valuable contributions to psychology from teachers in the immediate future." The contributions of such investigators, however, can be of value to psychology, and therefore indirectly to education, only if their data are obtained and presented with scientific exactitude. In the collection and elaboration of extensive material the methods used must be quantitative. To apply these methods adequately and apprcpriately, the presuppositions involved in their formulation must be thoroughly grasped, and the precautions to be exercised in their use must be fully known. For these reasons, therefore, the writer has endeavoured to furnish research students with "a concise yet fairly complete account of the various quantitative methods in psychology."

Placed in the hands of the teacher who is undertaking research in educational psychology, the book satisfies many wants, but creates many perplexities. The highly technical character of many parts prove a source of mild remonstrance. This, however, provides an excellent test of the worker's own fitness; and yields an excellent exercise in sustained earnestness and hard thought. Other little difficulties occasioned by the exposition are less welcome. New symbols, familiar only to the advanced psychologist or biometrician are sometimes introduced without explanation, while familiar signs, such as the symbol for summation, are explained not once, but repeatedly. Similarly, fairly obvious deductions are worked out in full, while others less obvious are abbreviated by the omission of many steps, or given in a form unfamiliar to the ordinary mathematical student. These are minor points. They have been indicated to the reviewer during the actual use of the book in the hands of such workers as the author mentions. To the student who posseses a thorough training in both psychology and mathematics, to the student who has a teacher at hand to illustrate or expound, they are not serious. They are features, however, which, if remedied in a subsequent edition, would considerably enhance its value.

The book as a whole forms a valuable exposition of the mathematical foundations of mental measurement, and more particularly of correlation. The book is avowedly written under the influence of Professor Karl Pearson; his lectures or publications are constantly cited in the footnotes. Many portions are critical in nature. These, however, are no demerits. The clear and cautious application of principles elaborated by one group of workers to the problems discovered by another group is always fruitful. And an occasional reminder of the tentative and controversial nature of the applications made, when conveyed with the sincerity and consideration characterising the present work, is never out of place.

The first part of the book deals with "Psycho-physics"; the second part with "Correlation." Appendices supply examples of multiple correlation, regression curves, and a correlation table worked out. A full bibliography is added.

The first chapter of Part I states the preconditions of measurement generally, and demonstrates the possibility of purely psychical measurement. The greater portion of it is occupied with criticisms of the assumptions underlying the system of mental measurement elaborated by Fechner. In the concluding section it is stated that in quantitative psychology, purely psychical measurement, though possible, has been but little exploited. Indirect measurements have been found more generally useful. The common measurements of reaction times, memory, fatigue, sensory acuity, are indirect. These record the external causes and the external consequences of mental processes in terms of physical units of time and of space. The measurement, however, of ability in terms of "ranks" based on an order of merit, is a partial return to a more purely psychical form. In a crude form this method is in common use in schools; and is one which has been found convenient in many scientific investigations.

The second chapter contains a full discussion of the chief "psycho-physical methods,"—complicated methods of procedure elaborated for the determination of sensory acuity by means of absolute and difference "thresholds." The discussion, excellent though it is, concerns the "professed psychologist" rather than the "educationist." It concludes, however, with a valuable section on frequency-distribution expounded from a more general standpoint.

The second part on correlation opens with an introductory chapter "free from mathematical complications." It is followed by a valuable account of the mathematical theory of correlation. The importance, nature, and limitations of of the Bravais-Pearson correlation coefficient, of the correlation ratio, of probable errors, of multiple correlation, of the elimination of spurious correlation, and of other and short methods of determining correlation, are all ably and concisely discussed. The following chapter gives a history of the use of the theory of correlation in psychology, and contains a criticism of Professor Spearman's earlier publications, largely from the standpoint of Professor Karl Pearson.

The third chapter is taken, with alterations and additions, from a paper in the *British Journal of Psychology* on "Some Experimental Results in the Correlation of Mental Abilities." From the mathematical standpoint, the investigation may well be taken as a model research. Fourteen tests were applied to six carefully selected groups of school children and University students of both sexes. The means, standard deviations, coefficients of variation, reliability coefficients with their respective probable errors were calculated, and are given in full. Hierarchies were drawn up to exhibit the intercorrelation of the various tests. Many of the conclusions are of special interest to the educationist. The correlation between psychic abilities is found not to be very close. The size of the correlation coefficient varies greatly from one group to another. The completion-test of Ebbinghaus is found to be a good measure of ability, correlating with "general intelligence" almost as closely as "scholastic intelligence" estimated by school marks. Correlations between one mental test and another closely resembling it,—for instance, erasing two letters, erasing four letters, and erasing all the letters in a page of print,—may be very low. In homogeneous groups of individuals, the author finds no positive evidence for a single "central factor" underlying all manifestations of general mental ability, and determining the various correlations between the specific mental abilities. Variability in mental capacity appears to be greater in the male sex than in the female.

The concluding chapter is on multiple correlation and the significance of correlation in psychology. The correlation coefficient is described as an instrument of analysis merely. It proves nothing. For the elaboration and proof of the hypothesis explaining the correlations thus revealed we must, as the author rightly insists, look elsewhere. Statistical formulæ and mathematical calculations must be supplemented by psychological observation and psychological insight. Nevertheless, both formulæ and calculations, together with an intelligent appreciation of their value and limitations, are needed too. And, we may add, nowhere are these so ably and authoritatively expounded as in the present work. CYRIL BURT.

"Social Aspects of Education." By Irving King, Ph.D. (xiii+421 pp.) The Macmillan Co., New York.

DR. KING has produced an admirable guide to the extensive literature of this subject, and this is, we take it, just what he hoped to do. The treatment falls under two broad divisions—External Social Relations of Education, and Internal Social Aspects of Education. Under the first we have such topics as "The Social Responsibilities of the School," "The Relations of Home and School," "Vocational Direction," &c.; under the second, "The Spontaneous Social Life of Children," "The Government of the School," "The Social Aspects of Mental Development," and the like. Each topic is briefly discussed by the author, and commonly further illuminated by an extract from a well-known writer. Most useful of all, perhaps, is the Bibliography which is appended in each case.

"Frœbel's Chief Writings on Education," rendered into English by S. S. F. Fletcher, M.A., Ph.D., and J. Welton, M.A. (xx + 346 pp.) 4/6 net. Edward Arnold, 1912 (Educational Classics).

Students of education will extend a hearty welcome to this volume of Frœbel's writings, for it supplies a long felt want. Who is there but at some time or other has vainly struggled to understand Frœbel's message as set out, for example, in Hailmann's translation of the *Menschenerziehung?* There was so much that wouldn't make sense, and, as if that were not enough, the translator's notes only added to the confusion, for they would not always fit in with our scheme of things, and we vaguely wondered why some educational philosopher did not arise in England to set the matter right. The task has at last been undertaken by Dr. Fletcher and Professor Welton, and, as we should expect, has been accomplished by them with conspicuous success. In a masterly introduction, they have given a clear and concise account of Frœbel's philosophical and educational position that is easily the best, we might almost say the only one, we have. They show what is not commonly recognized, that practically all that is valuable in Frœbel's teaching is but a restatement, often in the very words, of Pestalozzi, while the rest, including the whole of his elaborate apparatus, is the outcome of a vague idealism no longer acceptable, that we are accustomed to meet with in the poetry of Shelley, Wordsworth and others of the same period. By thus giving their authority for this sane view of Frœbel's position they have done a good deal for the cause of educational progress; they have also done good service in indirectly emphasizing once again the supreme importance of a knowledge of philosophy to the serious student of education. The only point on which we are disposed to differ is with their estimate of Rousseau's position (p. 18). Rousseau had a thesis to maintain, but with all his extravagancies he was surely the arch-enemy of tyranny and caprice.

The introduction is followed by some 300 pp. of translation, in which an attempt has been made to include all that is characteristic of Frœbel's teaching with the exception of the *Mother Songs and Games.* Part I is given up to the *Menschenerziehung*, which they translate as *The Education of Human Nature* (*The Education of Man*), and Part II to the writings on the kindergarten. The object has been to present in modern dress a true picture of Frœbel's spirit and his conception of the educative process, so as to make his message intelligible to a wider public. With this in view the translators have not scrupled to rearrange the original order of the text, to summarize where necessary, and to discard Frœbel's own phraseology where it seemed that the meaning could be conveyed more clearly and concisely in present-day idiom. All this has been accomplished most successfully. The only part to which we are disposed to take exception is in Chapter I (General Theory). This seems to us at times a little too concise for a beginner, for example, p. 34, last paragraph.

The book is provided with a useful summary of chapters, a chronological outline of Frœbel's life, list of chief writings, bibliography and index.

By some strange oversight Professor Welton's name is omitted from the cover of the copy before us.

C. BIRCHENOUGH.

"Experimental Psychology and Pedagogy." By R. Schulze. Translated by R. Pintner. (xv+364 pp.) G. Allen. 15/- net.

THIS book, in its original German form, was noticed in the *Training College Record* (Vol. I, No. 4). The high opinion of the value of the book which was then expressed makes us welcome very warmly its appearance in English. Translator and publisher have combined to produce one of the most attractive introductions to the experimental study of the foundations of educational procedure that we possess. The style is clear, the illustrations (there are 314 of them) are excellent, and the type would surely satisfy all the tests suggested by the British Association Committee which recently investigated and reported upon the subject, though they might perhaps object to the highly-glazed paper, rendered necessary by the large number of illustrations in half-tone.

The work is frankly based on that of Wundt and Meumann, but the author has himself carried out the experiments described—most of them in the Psychological Institute of the Leipsic Teachers' Association, an Institute founded and supported by an association of elementary school teachers! Moreover, he has himself modified old forms of apparatus and devised new ones in order that experiments might be conducted with whole classes instead of with individuals. The general plan of the book is designed to interest people who have no special knowledge of experimental methods. The author has adopted a popular method of description and exposition in which many of the refinements of the professional psychologist would surely be out of place. They would only terrify and warn off people who are keen to know what the new methods of investigation are like, and who might even do useful work, once their interest were aroused. The task of writing such a book is enormously increased in difficulty when there are no previous efforts to serve as warnings; it needed great courage to make the attempt in this particularly difficult field, and Herr Schulze has deserved the thanks of all teachers for his brave effort.

Readers must, however, remember that the treatment is always broad, and that whilst the book gives an admirable general survey of methods of dealing with particular problems, it is nowhere exhaustive. If they would themselves carry out the work described in any particular direction, it will not go so smoothly as the text might have led them to suppose. Larger books, monographs and journals must be consulted, once real work begins.

Nevertheless we commend the book most warmly to teachers as an elementary introduction to a subject which is daily growing in importance to their profession.

J.A.G.

BOOKS RECEIVED.

"**Where Education Fails,**" by Preston Weir, with an Introduction by Lord Sheffield. (114 pp.) Ralph, Holland & Co.; 1/- net (cloth).

"**Plays for Pedagogues,**" by F. H. Hayward, D.Lit. (95 pp.) 1/6 net (paper).

"**Germanic Philology,**" by Dr. R. Loewe. Translated and Edited by Dr. L. D. Jones. (xv+170 pp.) 4/6 net.

"**A History of Europe,**" by A. J. Grant, M.A. (xiv + 674 pp.) Longmans, Green & Co. 7/6 net.

"**The Service of the Hand in the School,**" by W. A. Bone. (xviii + 212 pp.) Longmans, Green & Co. 3/- net.

"**Archives Sociologiques,**" Bulletin No. 24.

"**Elementary Economics,**" by S. J. Chapman. (x+169 pp.) Longmans, Green and Co. 2/- net.

"**The Teacher's Companion,**" by Brother de Sales, M.A. (204 pp.) Longmans, Green & Co. 2/6 net.

"**Digest of Gide's Political Economy,**" by H. M. Desai. (224 pp.) Harrap & Co. 2/6 net.

"**Clay Modelling,**" by H. A. Rankin, A.M.C. (224 pp.) "Woman Teacher" Press. 3/6 net.

"**Northern Universities. Matriculation Papers in Mathematics and Mechanics,**" with answers and many solutions. By F. A. Bruton, M.A. (viii+353 pp.) Sherratt & Hughes. 3/6 net.

PAMPHLETS AND PERIODICALS.

Armstrong College, Department of Education, Papers, Vol. II, No. 1 (Essays, &c., by old and present members of the College) ; "**Reforms needed in our Educational System,**" by T. C. Horsfall, with Introduction by Sir Wm. Mather ; "**La Psychologie de l'Enfant en Belgique, Les Frontières anthropométriques des Anormaux,**" par Dr. Decroly ; "**Faits de psychologie individuelle et de psychologie expérimentale,**" "**La Mesure de l'Intelligence chez les Enfants,**" La Mesure de l'Intelligence chez des enfants normaux, par Dr. Decroly and Mdlle. Degaud ; "**Les Tests Mentaux chez l'Enfant,**" Rapport presenté par les Drs. Decroly et Boulenger ; "**School Review,**" "**Child Life,**" "**The Woman Teacher,**" "**Société libre pour l'Etude psychologique de l'Enfant**" : "*Bulletin Mensuel*" : "**University Education for Women,**" by Mrs. Henry Sidgwick, Litt.D. ; **Uber Intelligenzprüfungen** (nach der Methode von Binet und Simon) von Otto Bobertag.

GENERAL NOTICES.

THE Summer School movement grows apace in this country. The Educational Handwork Association are opening a new school at Yarmouth this summer, or rather they are transferring the School, which made so promising a beginning at Southsea last year, to the East Coast town, where the authorities offer them a warm welcome and excellent housing. The School at Falmouth will continue, and, of course, Scarborough, where some four hundred and fifty folk assembled last year, will once again open its doors.

The Frœbel Society propose to run a Summer School of Pedagogy at some place on the East Coast, not, I think, yet decided upon. The West Riding County School are organizing a School at their beautifully-situated Training College in Bingley, and the Schools at Brighton, Barry, and Ambleside have already issued their prospectuses.

If these Schools mean nothing else, they represent an interest in practical and theoretical pedagogy which is very welcome.

Subscribers to this Journal should note that a new volume begins with this number. Those who receive the Journal by post should send their subscriptions (3/-) for the current year to the Editor (Professor J. A. Green, The University, Sheffield). New subscribers may obtain sets of the first volume (five Nos) post free for 5/-.

Vol. 2, No. 2. June, 1913.

SHOULD YOUNG CHILDREN BE TAUGHT ARITHMETICAL PROPORTION?

BY W. H. WINCH.

PART I.

I. The Problem of the Experiment.

FOR many years in England there was little questioning as to the scope and purpose of Arithmetical instruction in Elementary Schools. The amount of Arithmetical work, and the order in which the various "rules" of Arithmetic should be introduced into the course, were both regarded as satisfactorily governed by the "Codes" of the Board of Education. But to-day an increasing attention to the practical purposes of Arithmetical teaching, and a growing recognition of the fact that very large numbers of children leave the Elementary Schools before the completion of the old "standard" courses, together with a permissive elasticity of curriculum, have given rise to much theoretical discussion, to much variation in practice, and to much experiment in schools. Unhappily the experiments have not, usually, been of such a nature that their results, even if validly obtained, could be safely accepted for guidance outside the schools in which they occurred. Pedagogical experiment, properly conducted, does not imply the getting of exceptional results by devoting increased time and energy to one particular school-subject, with, as is too often the case, a corresponding weakening in the attack on other subjects. Schools will always throw special stress on certain subjects here and there; it is well that it should be so; but the results of such special work are of little value to Experimental Pedagogy, except as imposing, as it were, a number of upper limits in various school-subjects. But the science of Experimental Pedagogy must be scientific in the strict sense of the word. Its conclusions must possess "general" truth, and its exercises and its tests must be so definite in character, so fixed in time (no extra odd minutes must be given to polishing things up), and so precise in the method of their administration, that any competent teacher, in any school, can repeat the experiments and test their conclusions for himself. Experiments not thus conducted may possess much personal interest, but they will be misleading if accepted as generally valid. Teachers feel this very strongly. Listen to their comments at Educational Exhibitions, and you will realize how strongly. Nor is it only "shirkers" who talk violently about unfair productions; they are not the persons who go to exhibitions at all; these aspersions are cast by eager and experienced teachers. They become irritated at the word "experiment," since for them it usually covers what they conceive to be work of special excellence produced by forced marches at the expense of other subjects. They do not like the tacit official attitude which seems to be, if it were expressed: Mr. Smith has done this with *his* boys; why can't you, Mr. Brown?

Yet teachers will attend, week after week, year after year, to hear of experiments and results in Pedagogy which are carried out under fair conditions. They are sometimes sceptical at first, but quietly, in their own schools, they try for themselves, and scepticism is changed speedily into enthusiasm. But there must be no marvels, and the "bad" results must be exhibited as frankly and fairly as the "good" ones.

I am constrained to preface my actual experiment with these comments because there is a suspicion among teachers that experiments in schools are only a modern method of setting the pace and raising the standard of work. They are quite unnecessarily alarmed, for the scientific experimenter, I can assure them, is much concerned for "true" results, but whether they are "good" or "bad" falls quite outside his province. And the result of experimental research is to reduce inflated curricula, and to bring school work more and more within the actual capacities of the child.

But it is useless merely to promise experiments which teachers will feel to be fair and find to be useful; it is better to give examples of them.

Most of us remember the distracted schoolboy whose feelings are expressed in the verse which runs: "The Rule of Three it bothers me"; and all of us know that Proportion usually comes late in the school curriculum. When shall we begin Proportion? is a question much discussed by teachers, especially in certain districts where the educational officials hold strong views upon the matter. We know that nowadays the quantity and place of Arithmetic in the elementary school curriculum depend partly on the views of the Head Teacher and partly upon the opinions of the Inspector of the district in which the school is situated. Head Teachers often consult each other privately, but apparently without much reciprocal satisfaction. With a view to throwing light upon the question: Is it possible or profitable to teach Arithmetical Proportion to young children? the following researches were made. They were carried out in a number of successive "steps" or "stages" which were, to a large extent, predetermined by theoretical considerations.

II. The Successive Stages of the Experiment. Why these Steps were adopted.

STEP I.

Readers of Modern Psychology are well aware that the old atomistic view of Mental Association is wellnigh given up. Stout[1] has argued strongly in favour of a more complex view, and has used the term "relative suggestion" to describe much that formerly was simply styled "association." Keatinge, in his book, *Suggestion in Education*, has complained of this title, since, as he says, the term "suggestion" already has in Psychology another and a very definite meaning. He referred, of course, to its services in hypnotism and allied uses.

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[1] "Analytic Psychology," Vol. II, chap. vi.

Moreover it was the title of Keatinge's book. In a review in *Mind* I said that I agreed with Keatinge, and recommended the expression "proportional association." We can hardly assert that *all* "association" is proportional, but much of it is which was not regarded as such by the classical school of psychologists. Teachers are disposed to maintain that the proportional association with which they are concerned in the "Rule of Three" is a mental process which shows itself late in school life. In an unquantified sense, and indeed in a definitely quantified form, it is probable that proportional association functions much earlier than teachers have hitherto believed. But, of course, the "indefinitely quantified," or, as it is usually called, the "unquantified" form, precedes the quantified form in its appearance. This research begins therefore with an attempt to determine its unquantified form in school children. In this stage the children are required to answer complete problems in Arithmetical Proportion by simply using the words "more" or "less."

STEP II.

It is usual to-day in teaching Arithmetical Proportion to follow the "Method of Unity." The child is required to move mentally, either to unity, or from unity, to the required answers. This "stage" or "step" was inserted to see how far, if at all, it was justified by results, when answers of "more" or "less" only were required, without numerical estimation.

STEP III.

As, quite obviously from the results, it was found that young children *could* work proportion sums unquantitatively, especially when only proceeding to or from unity, it seemed advisable to test their power to work proportion sums completely, that is, to give correct numerical answers to them. For both Step I and Step II were, and are, held by experienced teachers to be normally beyond the mental capacity of young children ; and this opinion being found erroneous, it was thought well, before proceeding further, to try whether the current opinion, that children could not give correct numerical answers to complete proportion sums, was not also erroneous. The results showed that there was considerable foundation for the current view.

STEP IV.

It now remained to be seen whether, if *incomplete* proportion sums were given, namely, those which proceeded to or from unity only, the children would be more successful. A number of these exercises were set, and very considerable improvement was made by many of the children. This improvement suggested the next step in the experiment.

STEP V.

It was now thought that we might again try what the children could accomplish in the numerical solution of complete proportion sums. But it was also thought advisable to question them in such a way that each sum was worked in two steps, involving (1) a passage to unity, and (2) a passage from unity to the required answer. Considerable improvement was again shown, and this led us directly to the final step.

Step VI.

Once more (see Step III) the children were asked to solve the problems in proportion numerically, but this time they were not guided through the analysis of the problems by means of the experimenter's questions. There was some falling off at first, but improvement rapidly supervened, and several sets of exercises were given of this kind. This "stage" concluded the experiments, and material was now at hand to enable us to come to conclusions with respect to the questions which instituted the researches, as well as certain others which arose during the course of them.

III. The First Series of Experiments.

i. General Conditions of the First Series.

A first series of experiments was carried out in the Infants' Department of a Municipal School in a rather poor, but by no means a vicious, district in the south-east of London. The parents of the children were, with few exceptions, hard-working people, and belonged to the labouring, rather than to the skilled artisan, class.

Previous to the "October Promotion" of 1912, there had been two Standard I classes in this school, but one of them was then transferred to the Senior Departments, leaving a class of 52 Standard I children in exer the Infants' Department. These were the children who worked the cises of this research. The class was composed of boys and girls in equal numbers, with an average age of seven years two months. There were ten children of seven years of age in other classes below the Standard I, but none of these took part in the experiment. All the other seven-year-old-children in the school were in the Standard I class, which also contained thirteen children of six years of age; the oldest child was seven years and nine months. Unavoidable absences reduced the number of children whose work was available for tabulation to 48. These children had been taught to work the "four simple rules" of Arithmetic, and had done much mental work in the usual problematic Arithmetic taught in London schools. They had also been accustomed to write down on paper the numerical results of their mental processes. They had, however, never attempted any problems in Proportion, nor had they ever applied the words "more" or "less" in the way required when dealing with proportional problems. Very small numbers were used in the problems which we gave, so that intelligent reasoning should, as far as possible, be the only requisite for the correct solution.

To maintain their interest in their own progress, the children were told the total marks gained by them at the end of each session in which the exercises were done. But no explanations were given as to the nature of the problems, nor any information as to which of their answers were correct or incorrect. It must also be added that no teaching of any kind relative to this work was done in the class during the course of the experiment. The children were provided with lead pencils and papers. They wrote their names at the head of their papers, and numbers 1 to 10 consecutively down the left-hand side. They were told that the problems would be read to them twice, and that they were to write down their answers, one under the other, after each problem was called out. No time limit was set. The children were not hurried; on the contrary, they were encouraged to pause and think. The next problem was not called out until the slowest child had set down an answer to the previous one, unless, of course, it was unable to give any.

ii. THE TESTS, THE CHRONOLOGY OF THE EXPERIMENT, AND THE METHOD OF MARKING THE TESTS.

The experiment began a few days after the "October Promotion," and the first exercise was worked on Tuesday, November 5th, 1912, at 9.40 a.m., immediately after a Scripture lesson. The following were the problems of the First Step, in which the words "more" or "less" were the only answers required.

The Problems of the First Step with answers of "More" or "Less" only.

1. I paid 2 shillings for 2 pounds of butter. Shall I have to pay more or less for 4 pounds of butter?
2. It takes 12 yards of rope to make 4 clothes-lines. Will it take more or less yards of rope to make 2 clothes-lines?
3. A lamp burns 3 pints of oil in 3 nights. Will it burn more or less oil in 2 nights?
4. Two boys drink a pint of milk in two days. If there are 4 boys to drink it, will it last more days or less days?
5. If I buy 3 boxes for 2 pennies, can I buy more boxes or less boxes for 6 pennies?
6. If we get 4 herrings for 4 pence, shall we get more herrings or less herrings for 5 pence?
7. If it takes 2 pounds of flour to make 4 puddings, will it take more pounds of flour or less pounds of flour to make 3 puddings?
8. Four children ate 2 loaves of bread. Will 6 children eat more loaves of bread or less loaves of bread?
9. It takes 2 men 3 days to build a wall. Will it take 6 men more days or less days to build the wall?
10. A man uses 16 nails to make 2 boxes. Will he want more nails or less nails to make 9 boxes?

Very considerable success attended this first venture—the results will be given in detail later—and, though theoretically it seemed likely, I began to doubt whether any better result would be obtained if the problems were reduced in difficulty, and involved one movement only, namely, to *or* from unity. Such problems would be, as it were, halves of Proportion sums.

The Problems of the Second Step, with answers required of "More" or "Less" only.

It will not be necessary to give these *in extenso*. One or two may be cited to show how they were constructed:

1. I pay 4 shillings for 4 pounds of butter. Shall I have to pay more or less for 1 pound of butter?

2. It takes 9 yards of rope to make one clothes-line. Will it take more or less yards of rope to make 4 clothes-lines?

and so on.

Greater success attended this exercise, and we decided to ascertain how much the children would accomplish when required to give *numerical* solutions to complete Proportion problems, for the work of the children, so far, had much surpassed our expectations.

The Problems of the Third Step, in which Numerical Answers were required to Complete Proportion Sums.

1. I pay 2 shillings for 2 pounds of butter. What have I to pay for 4 pounds of butter?
2. It takes 12 yards of rope to make 4 clothes-lines. How many yards of rope will it take to make 2 clothes-lines?

and so on.

There was a very marked declension from our previous results, and it did not seem that the children were prepared to undertake successfully a direct attack on the numerical solution of complete Proportion sums, hence the difficulty was reduced in the next step of the experiment, in which problems only involving a passage to or from unity were given.

The Problems of the Fourth Step, with Numerical Answers to questions proceeding to or from Unity only.

1. If 5 hats cost 10 shillings, how much will 1 hat cost?
2. One towel measures 3 yards. How many yards will there be in 10 towels?

and so on.

Each problem was built up on the lines of the corresponding problem of the preceding stages, but the subject-matter and the numbers were changed. The principle of the problem, however, remained the same. A number of sets similar to the one just quoted were given, after which the complete Proportion sums were once more attempted, two answers, however, now being required to each sum.

The Problems of the Fifth Step, in which two Numerical Answers were required—(1) Proceeding to Unity.
(2) Proceeding from Unity.

1. I pay 4 shillings for 2 pairs of boots. What shall I have to pay for 3 pairs of boots?
    (1) What shall I have to pay for 1 pair?
    (2) What shall I have to pay for 3 pairs?
2. It takes 10 yards of stuff to make 5 dresses. How many yards of stuff will it take to make 4 dresses?
    (1) How many yards will it take to make 1 dress?
    (2) How many yards will it take to make 4 dresses?

and so on.

Each successive set of problems, as before, was built upon the same patterns. Steady improvement was shown in this work; and, finally, the complete problems were given without the analysis into movements (1) and (2).

The Problems of the Sixth Step, in which the Final Numerical Answers only were required, the children not now being helped to analyse by the Experimenter's Questions.

1. I buy 2 chairs for 3 shillings. What must I pay for 4 chairs?
2. It took 6 yards of lace to trim 3 pinafores. How many yards of lace will it take to trim 4 pinafores?

and so on.

Each successive set of problems was built up on similar patterns as before.

The method of marking the problems was a very simple one. One mark was given for each correct answer, and no marks at all were allowed for any answer which was not quite correct.

With the exception of the second exercise, which was given on Wednesday, November 6th, the sets of problems were given on Tuesdays and Fridays, though on one or two occasions the exigencies of the school arrangements compelled us to omit them at a date on which they should have been given. The exercises began, as I have said, on November 5th, 1912, and, with a necessary intermission, due to the Christmas holidays, continued until Friday, January 24th, 1913. All the sets of problems were given at the same time of day as the first set, namely, at 9.40 a.m., always following a Scripture lesson. The exercises were in all cases administered by the Head Mistress, who had had much experience of experimental work.

iii. RESULTS.

The first question which teachers ask is, "Can these young children do the Proportion sums?" Before discussing that question I give a table of results, showing the average marks per child for each set of problems, beginning on November 5th, 1912, and concluding on January 24th, 1913.

Table I, showing the average number of correct answers of 48 Standard I children, for each set of Problems.

		Maximum=10 Average Mark per child.	*Mean Variation.
FIRST STEP.	Complete Proportion Problems. Answered by "More" or "Less."		
Exercise 1.	,,	7·8	1·4
SECOND STEP.	Half Proportion Problems. Answered by "More" or "Less."		
Exercise 2.	,,	8·3	1·3

		Maximum=10 Average Mark per child.		*Mean Variation.	
THIRD STEP.	Complete Proportion Problems. Answered Numerically.				
Exercise 3.	„	4·1		1·6	
FOURTH STEP.	Half Proportion Problems. Answered Numerically.				
Exercise 4.	„	5·2		2·2	
„ 5.	„	5·2		1·9	
„ 6.	„	6·0		1·8	
„ 7.	„	6·5		1·8	
„ 8.	„	6·9		1·6	
„ 9.	„	7·1		1·5	
FIFTH STEP.	Complete Proportion Problems. Answered Numerically in Two Halves (1) To Unity; (2) From Unity.	(1)	(2)	(1)	(2)
Exercise 10.	„	6·0	3·6	1·6	1·5
„ 11.	„	6·8	5·0	1·8	1·9
„ 12.	„	6·0	4·9	1·9	1·9
„ 13.	„	7·6	6·2	1·5	2·1
„ 14.	„	7·9	7·1	1·5	1·9
SIXTH STEP.	Complete Proportion Problems. Answered Numerically.				
Exercise 15.	„	5·6		1·5	
„ 16.	„	6·4		1·9	
„ 17.	„	6·9		1·6	
„ 18.	„	7·5		1·5	

Note to Table I.—* The mean variation is the mean of the deviations of the individuals from the average of the group containing them.

iv. SUGGESTED CONCLUSIONS.

(*a*). Can young children work Problems in Proportion?

Can Standard I children in Infants' Schools successfully attack Problems in Proportion? Most teachers who read through the figures given above would be disposed to assert that there is something very special in the circumstances of the Infants' School in which the work was done. That is certainly not the case; though it is true that the School generally is well taught as well as the class of Standard I children who did the work. Teachers would assert that the results are *not* true generally for Standard I children in Infant Schools. I ask them to use these problems themselves, and, observing carefully the procedure laid down, check my results by means of their own. I am not inclined to assert that all Standard I classes in Infants' Schools will be equally successful; but they will be much more successful than will be believed a priori by most of their teachers.

(*b*). In which "Stage" or "Step" are children most successful? I think all teachers will agree that the results in the First Step much exceed their expectations. The theoretical reasoning which led us to introduce the work by means of problems to be answered in an unquantified way seems amply justified. No less than 7 children obtained full marks; 13 obtained 9 marks; 8 obtained 8 marks; 10 obtained 7 marks; 5 obtained 6 marks; 1 obtained 5 marks; and 4 obtained 4 marks.

Still better were the results in the Second Step, in which once more the children answered by "More" or "Less." The "Half" Problems, proceeding to or from Unity only, seemed easier for the children, even when they were not required to solve them numerically. The result does not render this conclusion quite certain, since there would have been improvement in the second exercise, even had it been precisely similar to the first. But there would probably not have been so much improvement.

Step 3 is hardly a step in the experiment at all. We inserted this exercise for two reasons: Firstly, because we were surprised at the very high results so far and were not quite *sure* that the children could not answer the complete questions numerically, if we set them to do it. Secondly, because the results might enable us to establish a measure of improvement later on.

The results of Exercise 3 went far to justify the opinion ordinarily held by teachers. The children, even when aided by the preliminary exercises (Exercises 1 and 2), could *not* solve complete Proportion sums numerically—4·1 out of 10 was a decidedly low average mark. In the next step we served two purposes. We tested the alleged advantage of using "Half" Proportion sums as preliminary training, and gave a sort of indirect justification to the Method of Unity. Rapid improvement supervened; an increase from 5·2 to 7·1 in five exercises is a very marked improvement; it certainly seemed as if we were on the track of the child's developing thought.

In the next stage—Step 5—a definite attempt was made to use the Method of Unity, though without direct teaching. The Problems were now more difficult, since they were complete Proportion sums, not "half" Proportion sums as in Step 4. Success was small in the first exercise, but improvement occurred rapidly, especially in the second half of the process. The analysis into two movements seemed very helpful.

In Step 6 there was a temporary set-back, since the children were no longer helped in their analysis by the experimenter's questions. But improvement rapidly supervened, and in four exercises (Exercises 15 to 18) there was an increase in the average mark of 7·5 minus 5·6 with the same mean variation. The results show that these children *can* work complete Proportion sums mentally with small numbers and write the answers down. I do not wish to generalize this result for all Standard I children in all Infant Schools; but the experiment might well be tried.

(*c*). What is the Cost in Teaching Power ?

This experiment shows how rapidly children will improve by practice without direct instruction. These children have not been taught in the ordinary sense of the word. They have been led by the successive "steps" of the experiment, and by the questions of the experimenter in Step 5, to analyse for themselves. That the method is successful is obvious. Whether it is a *more* successful method than one directly instructional can only be determined by further research. It is fairly certain that the method here used is a better one than any but the best teaching. Confused or adult explanations will certainly delay rather than help the children. In any case I have purposely omitted a teaching factor, since I am anxious to avoid making these results, and others to be subsequently given, depend upon the excellence or otherwise of the teachers of the classes.

(*d*). What is the Cost in School Time ?

I put each exercise at a maximum of 20 minutes, and there are 18 exercises. The time for the marking is short, and to read the results to the children after each exercise takes two or three minutes only. It is for teachers to determine whether the result is worth the time required to produce it. Teachers whom I have consulted are of opinion that it is.

(*e*). What is the Cost in Fatigue ?

With these exercises, taken twice a week only, there was no evidence of fatigue. There is improvement throughout. This does not, however, mean that there is no fatigue ; we should require differential improvements of equal groups to prove that ; but it does mean that there is no such fatigue as to mask improvement by practice. The steady improvement without teaching is doubtless due to the mental efforts made by the children, which, though frequently ineffectual at the time, bear fruit in succeeding exercises of the same sort.

(*f*). Which Method does the Experiment Favour ?

The whole course of the experiment seems to show that the Method of Unity is a good one. But I do not wish to assert that *none* of these problems could be, and were, worked by another method. In further researches there will be adduced subsequently introspective evidence, which bears on this issue. The temporary set-backs, as from Step 4 to the first movement in Step 5, and from the second movement in Step 5 to Step 6, where a slight change of problem or process is made from one "step" to another, does not mean that the practice result of the preceding step is worthless, but only that it requires time to get its setting, so to speak, in its new surroundings.

(*End of the First Series of Experiments.*)

POPULAR AND UNPOPULAR SCHOOL-SUBJECTS.

By E. O. LEWIS.

As this paper appears in *The Journal of Experimental Pedagogy*, it is necessary to state definitely at the outset the precise character of the investigation, lest the reader may expect what has not been attempted. Statistics and experiments, as a rule, serve very different functions in the world of science. Statistics propound problems; experiments solve them. True, there are experimental statistics—data obtained under specially-arranged conditions; but, generally speaking, statistics are quoted in support of a hypothesis which cannot as yet be experimentally demonstrated. The natural scientist, as a rule, talks positively, because his data are the results of experiments; the politician talks, or should talk, reservedly, because most frequently he can but quote statistics, as the problems he tackles are too complex to allow of experimental treatment. This investigation deals with statistics, and not experiments. Its chief aim is to suggest, and not to solve, problems regarding the curricula of our elementary schools. The data obtained deal with such a complexity of conditions that great care is necessary in arriving at a generalization, even if it be only the statement of a problem. A school-subject may be liked or disliked by pupils for various and diverse reasons. The natural aptitude of the child and that of the teacher, the facilities for the teaching of the subject, the syllabus chosen, the method of presenting the matter—a host of trivial associations and a complexity of motives—are some of the factors which determine the popularity or the unpopularity of a school-subject. The fact that Drawing is one of the most popular, and Recitation one of the most unpopular subjects may be interpreted very differently by various teachers. Therefore this paper can place no claim to being "the last word" on any of the topics with which it deals; in fact, in view of the paucity of similar data which have been systematically collected, it has a better claim to being regarded as "a first word."

Methods.

Briefly, the following was the method adopted of getting pupils to set the school-subjects in the order of preference. The teacher set a list of the chief subjects on the black-board in an indiscriminate order. The class copied this list, as given on the black-board, on a sheet of paper. The pupils were told to draw a line through the name of the subject best liked, and to write this name on another piece of paper which was supplied. After this, each pupil chose the subject liked best of the remaining subjects, and placed this second on the list; and so on, until the list was exhausted. Every precaution was taken to prevent any suggestion being made to the pupils as to the preference of the teacher, investigator, or any of the fellow-pupils. In the majority of cases the pupils' names were not written on the papers, and special pains were taken to explain to the pupils that *their* preference was the object sought.

The list of subjects varied with the classes and schools. Generally, pupils in Standards V—VII (age 11—14) had a list of a dozen to fifteen subjects, Standards III and IV (age 8—10) a list of eight subjects, and Standard II (age 7) a list of six subjects. It is obvious that all subjects could not be included, as the difficulty of placing the subjects increases considerably with the length of the list. Such subjects as Writing and Spelling were often omitted, because they are included in the more comprehensive subjects, Dictation and Composition. Mental and written Arithmetic were regarded as one subject, and likewise oral and written Composition. This does not mean that we regard the distinction between these two aspects of the subject as irrelevant to this investigation. In fact, there is ample proof in our results that various aspects of the same subject appeal in a very different way. A more instructive and profitable investigation than the present would be to deal with the chief aspects of each school-subject, and thus get some definite data as to the most educational manner of dealing with these subjects.

Data were obtained from about 8,000 pupils (5,000 boys and 3,000 girls), 6,000 of whom were in London schools and 2,000 in provincial schools, mostly in South Wales. With the exception of a few central[1] schools, the pupils all attended elementary schools. Schools of different types supplied these data—slum schools and others in respectable suburbs, provided and non-provided, Gentile and Jewish, monoglot and bilingual (Welsh and Jewish); schools conducted in the ordinary way by class teachers, and others where specialization was attempted.

The results obtained from any one class were manipulated as follows:—A table (e.g., Table I) was compiled, giving the number of times each subject occupied a certain position (large figures). Then each of these numbers was multiplied by the position number, and the products (small figures) were added. The subject with the lowest sum of products was the most popular, and the other subjects were placed in position according as the corresponding sums increased. In the remaining part of this paper we shall refer to this as the *class list*. The results of each class were dealt with similarly.

TABLE I.

Positions in Pupils' Lists.

	I	II	III	IV	V	VI	Totals.	Positions on Class List.
Drill	4^{4}	8^{16}	6^{18}	4^{16}	6^{30}	8^{48}	132	V
History ...	4^{4}	5^{10}	8^{24}	13^{52}	5^{25}	1^{6}	121	III
Drawing ..	11^{11}	7^{14}	7^{21}	2^{8}	5^{25}	4^{24}	103	I
Arithmetic	9^{9}	6^{12}	3^{9}	5^{20}	5^{25}	8^{48}	123	IV
Reading...	8^{8}	9^{18}	7^{21}	2^{8}	5^{25}	5^{30}	110	II
Scripture..	—	1^{2}	5^{15}	10^{40}	10^{50}	10^{60}	167	VI

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[1] Central schools in London correspond to the higher elementary schools in the provinces; they generally have an industrial bias.

It is obviously quite impossible to give the results of all the classes which have given data; hence we must content ourselves with giving some examples of the chief types of results obtained. Yet we thought it desirable to give a general synthesis of all the results. The difficulty confronted when we attempted to do this was that the subjects varied in the different schools, and the class lists had not the same number of subjects. The synthesized results given in Table II were obtained by dividing each class list, that is, the list giving the subjects in their order of preference as placed by a single class, into three equal or approximately equal divisions. Thus, if there were fourteen subjects in the list, Section A would include the five top subjects, Section B the middle four, and Section C the five bottom subjects. Then a table was compiled from all the class lists indicating the number of times each subject was placed in Sections A, B, and C respectively. In order to make the results thus obtained comparable, the percentage number of times each subject occurred in these three sections was calculated, and these percentages are given in Table II.

A natural supposition with regard to the data obtained is that whilst the pupils would show definite and decided choice with regard to the first few subjects on their list, and likewise with the subjects at the bottom of the list, the intermediate subjects would be placed somewhat haphazardly. In order to test this, three classes were asked to make lists before and after the midsummer month holiday. In one case the subjects were placed in the same order in the two class lists. In the two other cases the difference was but slight; only a few subjects had changed their positions. Moreover, on comparing the papers of the various individuals, the correspondence was so evident as to give ample proof that there had been careful judgment in the formation of both lists.

The investigation was not solely statistical. The vast majority of the pupils stated the chief reason why they liked the subject placed first on the list, and why they disliked the subject placed last. In many of the upper classes the pupils wrote a composition on "The subjects I like most and least, and why." The answers given by the pupils have proved invaluable in interpreting some of the results obtained, and are of intrinsic interest to the student of child-psychology, throwing much light upon the child's standpoint of evaluation and his conception of "reason."

TABLE II.

	Sections		
	A	B	C
Drawing	78	20	2
Manual Subjects[1]	66	26	8
History	64	24	12
Reading	53	38	9
Singing	32	48	20

(*Continued overleaf.*)

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[1] Subjects included under this heading are Wood and Metal Work, Needlework, Embroidery Work, Laundry, Housewifery, Clay and Card Modelling.

	A	B	C
Drill	20	55	25
Arithmetic	16	53	31
Science[1]	23	37	40
Nature Study	16	36	48
Dictation	4	57	39
Composition	18	28	54
Scripture	4	38	58
Recitation	9	23	68
Geography	4	24	72
Grammar	—	6	94

Results.

It is not our intention to discuss at length in this paper the pedagogical applications of the results obtained, as this will be done elsewhere. Here we shall give some examples of the data obtained, and indicate a few of the chief features of our results.

A glance at the synthesized results given in Table II suffices to give the impression that there is a definite grouping of certain types of subjects. The first subjects on the list—e.g., Drawing and Manual Subjects—are characterized by the scope they give to the activities of the child. The subjects which occupy the bottom places on the list, namely, Scripture, Recitation, Geography, and Grammar, as generally taught in our schools, give scope more particularly to the vocal activities of the teacher. The predominance of the practical subjects in the former half of the list, and of the oral subjects in the latter portion, is a result the significance of which most educationists are realizing more and more. In addition to this general cleavage between the practical and oral subjects, the list may be regarded as made up of a number of definite groups of subjects. Thus, Drawing and Manual Subjects form one group; then History and Reading[2]; Singing and Drill; Arithmetic, Science and Nature Study; Dictation and Composition; and the last group of oral subjects already mentioned. These are by no means chance groupings. Hundreds of lists sent in by the pupils exhibited similar grouping of the subjects. These lists were suggestive of what the pupils regard as the most closely allied school subjects, and they might supply data that would form a suitable basis for our theories of correlation. The following is an example typical of many papers received from the pupils:—Embroidery, Needlework, Games, Drawing, Drill, Singing, Reading, History, Composition, Writing, Science, Arithmetic, Geography. In the vast majority of the papers the Manual Subjects were placed in adjacent positions, and so were the Sciences; Drill and Music were but seldom separated; whilst History, Reading, and Composition frequently formed a group. The pupils' lists in many cases served to remind us that secondary considerations tend to lead teachers to overlook the natural affinity between certain subjects. Thus Drill and Music are not as closely correlated in our schools as they might be; and the discouraging of musical drill has meant, from the child's standpoint, that the Drill Lesson has lost much of its charm. Independence of judgment by the child in relating school subjects is manifested by the relative positions of History and Geography. Very seldom did any of the individual lists indicate that the pupils recognized any close affinity between these two subjects, which seems to confirm the secret belief the writer has had for some time, that much of the supposed correlation in the teaching of History and Geography has been spurious and artificial; and many of the attempts made to correlate them have resulted in little gain but much loss in the teaching methods of the two subjects.

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[1] This heading comprised chiefly Hygiene and Object Lessons.

[2] It was found that in many schools much of the Reading was from Historical Readers.

So definite and systematic was the placing of the subjects by many of the pupils that in the case of one school an attempt was made to surmise, from an examination of the lists, the general mental characteristics of the pupils, who were complete strangers to me. The head teacher remarked that my surmises corresponded to a great extent with the impressions she had formed after several years acquaintance with the pupils. The principles by which these surmises were guided were very vague and general, but the success of the experiment suggests that it might be quite possible in the future to evolve a scheme that would prove a valuable help to the psychologist and the teacher in deciding the chief types of intelligence, and in fixing the type to which the individual most closely resembles.

The synthesized results in Table I do not give any accurate idea of the position which the subjects occupied on the lists of the individual pupils. Thus, it would be quite unjustifiable to conclude from this table that Arithmetic, for instance, came at the middle of the list of the majority of the papers. It would probably occupy this position in Table II had it been placed an equal number of times at the top and bottom of the list and in no intermediate position. By adding the numbers indicating the times each subject was placed in the various positions, we had data for deciding the relative distribution of the subjects. It was found that although Drawing was higher than the Manual Subjects in the general list, the latter were more consistently highest in the lists of the individual pupils. The subjects which showed the most scattered distribution, that is, occupied extreme positions, were Arithmetic, Singing, Drill, Drawing, Recitation, and Reading, in the order given. Arithmetic was generally either very high on the list or very low. One reason for this is that results were obtained from both boys and girls. Generally speaking, Arithmetic is popular with a considerable section of the boys, especially in the upper classes; and disliked by a large section of the girls. The converse holds good of Singing, which was more popular with girls than boys. The educational significance of the greater distribution of these subjects is that they serve to suggest a basis upon which we may in the future proceed to decide scientifically the various mental types. Again, should specialization[1] ever become a feature of our elementary schools, the fact that the majority of pupils seem to have definite likes and dislikes towards certain subjects ought to be some guide in deciding what subjects it will be well to allow as optional and which should be compulsory. Manual Subjects and History were invariably high on the individual lists, and no better plea is needed for the universal teaching of these subjects than this general appeal they make to all pupils. But it does not at all follow that the subjects that appear at the bottom of the list should be excluded from the school curriculum. No doubt, had similar data been obtained twenty years ago, Drawing would probably have appeared near the bottom of the list.

The grounds of dislike towards certain subjects are often to be found in the wrong conceptions we have as to the methods of teaching them, and not in any fundamental incompatibility between the subjects and the child-mind. This is substantiated to some extent by the fact that in the same school Recitation, although extremely low in the majority of the class lists, was placed first by one of the other classes, and on investigation it was found that the teacher of this class had distinctive methods of teaching the subject. But the universal dislike of Grammar should set us thinking whether in fact we are not attempting the impossible in teaching Grammar to pupils under twelve years of age; or, if it must be taught, whether our conception of the subject is not fundamentally wrong. No more striking comment on the average Grammar Lesson could be made than that we received on one of the papers, "I don't like Grammar, because I am not good at guessing." Such a remark is as pathetic as it is true.

The class lists were compared in order to find whether there is any tendency to prefer certain subjects as the pupils grow older. In this case again the comparison is incomplete, because in the majority of the elementary schools new subjects, e.g., Manual Training, are introduced when the pupils reach the upper classes. As already stated, the practical subjects, e.g., Drawing, Needlework, were high in all the class lists, although in several of the girls' departments Needlework was less favoured by the younger pupils, no doubt due in part to the eye-strain it involves. In the majority of the schools Reading, Composition, and Sciences increased in popularity with the school age. If we bear in mind the methods adopted in the majority of schools in teaching these subjects, the increasing popularity with age is an interesting feature in the light of the Culture-Epoch theory. The age of the artisan precedes that of the *litterateur* ,which suggests that a liberal education should follow and not precede, as it does at present, vocational training.[2] In accordance with the same theory, although it seems contrary to what we have just suggested, it is found that History is a subject that appeals greatly to pupils; and our data frequently suggest that the appeal is strongest to young pupils. The same seems to be true of Scripture. The two subjects whose positions on the class lists vary most consistently are Music and Composition. Music loses its popularity in the upper classes, especially with the boys, one obvious reason for this being that from twelve to fourteen is the period of vocal transition. Composition, on the other hand, when given in lower classes, seems to be beyond the abilities of the pupils, and it is very doubtful whether formal lessons in Composition are advisable with pupils under ten.

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[1] Pupils seem to favour subjects taught by specialists. It was noted that Science, when taught by a special teacher, was much more popular than in schools where the class teacher taught the subject.

[2] Mr. W. Lewis, Head Master ot the Llanelly County School, who has obtained data from pupils in the Welsh Secondary School, finds that the older pupils show a preference for the literary subjects.

The opinion of the average person and the results of experimenters are very much at variance as to the degree and importance of sex differences. To the person taking a broad view of the question, the mental differences between men and women seem so obvious as to be axiomatic; but, strange to say, the scientist, examining his carefully-collected data, detects but trivial differences. Why there should be this disparity between general experience and scientific results is a question which probably has many answers.

In the present investigation we obtained some data from mixed schools, where boys and girls were taught by the same teachers in almost all subjects. The class lists of one school are given in Table III, and these are fairly typical of those obtained from other schools. One noticeable feature is the greater appeal History makes to boys than to girls, especially in the higher classes. The result is not surprising when we bear in mind the predominant military aspect of History that is found in most syllabuses. Arithmetic, as a rule, is more popular with the boys than the girls. More surprising is it to find that Drawing makes a greater appeal to boys than to girls. This is more marked in most of the other lists than in those given in Table III. Judging from the statements made by the pupils as to why they preferred Drawing, the utilitarian aspect appeals to boys, whilst the artistic aspect makes the greater appeal to the girls. On the other hand, the subjects which seem more popular with girls than boys are Singing, Recitation, Reading, Composition, and Scripture. The obvious appeal of the first two subjects is to the tenderer emotions; and most girls seek pleasure in Reading, whilst their brothers seek it in boisterous games. The greater preference shown for Composition is no doubt attributable to the fondness for Reading. The results of this investigation show again and again the close affinity between these two subjects.

TABLE III.

Standards VII[1]		VI		V	
Boys.	Girls.	Boys.	Girls.	Boys.	Girls.
Manual Work	Needlework	Manual Work	Needlework	Manual Work	Needlework
Drawing	Singing	History	Reading	Drawing	Composition
History	Scripture	Reading	Scripture	Science	Drawing
Singing	Composition	Drill	Drawing	Arithmetic	Singing
Reading	Recitation	Drawing	Recitation	History	Reading
Scripture	Writing	Science	Singing	Reading	Drill
Writing	Reading	Arithmetic	Composition	Singing	Writing
Science	Drill	Scripture	Writing	Writing	Scripture
Drill	Drawing	Singing	Drill	Drill	Science
Arithmetic	Arithmetic	Recitation	Arithmetic	Scripture	Arithmetic
Recitation	History	Writing	Science	Composition	Recitation
Composition	Science	Composition	History	Recitation	History
Grammar	Grammar	Grammar	Grammar	Grammar	Grammar

Standards IV A[2]		IV B[2]		III A	
Boys.	Girls.	Boys.	Girls.	Boys.	Girls.
History	Singing	History	History	History	Recitation
Drawing	Reading	Drawing	Reading	Drawing	Reading
Arithmetic	Drawing	Drill	Drill	Reading	Drawing }
Reading	Drill	Reading	Drawing	Nature Study	History }
Scripture	Scripture	Arithmetic	Recitation	Drill	Scripture
Object Lesson	Arithmetic	Scripture	Scripture	Arithmetic	Drill
Dictation	History	Singing	Object Lesson	Dictation	Nature Study
Drill	Recitation	Recitation	Singing	Scripture	Singing
Singing	Dictation	Object Lesson	Dictation	Recitation	Arithmetic
Recitation	Object Lesson	Dictation	Arithmetic	Singing	Dictation

Standards III B		II A		II B	
Boys.	Girls.	Boys.	Girls.	Boys.	Girls.
History	Reading	Drawing	History	History	History
Drawing	History	History	Drawing	Drawing	Drawing
Reading	Nature Study	Arithmetic	Reading	Reading	Reading
Nature Study	Drawing	Reading	Arithmetic	Arithmetic	Singing
Recitation	Scripture	Singing	Singing	Singing	Arithmetic
Singing	Singing	Drill	Drill	Drill	Drill
Arithmetic	Arithmetic				
Scripture	Recitation				
Dictation	Drill				
Drill	Dictation				

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[1] The average age of the pupils in Standard VII was 13—14, in Standard II about 7, and intermediate in the intervening classes.

[2] In each case Class A is the higher section, and Class B the lower section.

Obviously one of the potent factors in deciding the preferences of the pupils is the teacher. In some cases the class-teachers presented lists of the subjects in the order in which they preferred teaching them, and these lists were interesting when compared with those obtained from their pupils. As might be expected, the teacher's first subject was often that of the pupil's, but this was by no means as general as was expected. Seventy-six teachers' lists were obtained, but only in thirty-five cases did the teacher's first subject correspond with that given by the class. The disparity, however, was more marked in the lower sections of the lists. The fact that a subject is disliked by the teacher seems to be no infallible criterion that it will be disliked by the pupils. The pair of lists given in Table IV is a typical example of a good number obtained, and should be a sufficient answer to the objection that this investigation has been dealing with teachers' and not pupils' preferences.

TABLE IV

Teacher's List.	Class List.
History	Drawing
Geography	History
Arithmetic	Writing
Scripture	Drill
Reading	Singing
Recitation	Reading
Writing	Science
Composition	Scripture
Drill	Geography
Science	Composition
Drawing	Arithmetic
Singing	Recitation

The compositions and statements of reasons received from the pupils supplied very suggestive and interesting data, which we cannot possibly discuss fully in this paper. The vast majority impressed us with the failure of the average child to give any adequate reason for what was to all appearance a very decided choice. The reasons given by pupils of twelve to fourteen were not much better than those given by pupils of eight. On the whole, the boys showed to better advantage than the girls, their reasons being more original. Quite a large number of the reasons given were of a very general nature—e.g.: "I like History, because it is interesting"; "I hate Arithmetic, because there is no fun in it": whilst many other statements showed how irrelevant factors decided the pupil's choice, e.g., "I don't like Singing, because it makes my legs ache;" which is explained by the fact that the class stood during this lesson. The average child seems to have a very feeble conception of rational causation, and this should give no little comfort to the parent when endeavouring to answer the torrent of questions which the child takes a delight in pouring forth.

The papers were classified according to the predominant character of the reason given. It was found that the vast majority might be regarded as "utilitarian" reasons; the second most important factor deciding their choice being interest; whilst proficiency in a subject made a poor third in the list of reasons. It should be explained that most of the papers giving reasons for the choice of the top and bottom subjects on the list were obtained from the upper classes, and most of the pupils in these classes contemplate taking up a vocation in the near future. But even after we allow for this, and bear in mind the great care needed in interpreting the statements of the pupils, the overwhelming preponderance of this practical outlook of the child is of considerable pedagogical significance. Fortunately, however, the child's idea of utility is not so exacting as that of the adult. Thus, Drawing is useful "to spend the time on the long, dreary nights"; Recitation is useful "to entertain our friends"; Singing, "to amuse the crowds outside the theatre"; Arithmetic "prevents the shopkeeper cheating us"; Hygiene "tells us what is inside us"; and Scripture justifies its inclusion in the school curriculum in the sight of one little fellow because "it makes it easier to say my prayers." Scripture, however, was frequently placed lowest on the list because the pupil could find no use for it. On one paper we find that "Scripture will be no use to me after I am fourteen"; whilst another East End boy, who evidently had had some insight into business methods, states, "You can't make a living with Scripture."

The papers made quite evident one reason of the popularity of such subjects as Drawing, Needlework, Manual Instruction, and silent Reading. Again and again the pupils refer to these as "nice, quiet" lessons; "I get my own time"; "I don't get grumbled at all the time"; "I get quietness to think"; "I like doing things without people telling me all the time." On the other hand, lessons such as Recitation, Music, and Scripture are disliked because "there is such a noise"; "It makes my head ache"; "I get a sore throat"; "I can't think when all the others are shouting"; and many such reasons. These are severe criticisms not altogether undeserved by our present attempts to educate children in a wholesale fashion.

The most striking result of this investigation is the almost universal dislike of Recitation. When it is borne in mind that Recitation is often the chief lesson in which there is an opportunity to foster a taste for literature—a primary aim of any system of education worthy of the name—the significance of this result should urge all teachers and educationists to give the matter serious consideration. The pupils' statements once again leave us in no doubt as to one of the reasons for the great dislike of this lesson. Such remarks as "I get tired of shouting the same thing over and over again" were received with monotonous recurrence. But such a dislike could hardly be engendered by one factor. Other considerations are the unsuitability of many of the poems chosen; the teacher's underestimation of the memorizing powers of the child once it understands a poem; and the impossibility of learning and appreciating anything amidst the noise of simultaneous repetition.

The popularity of History is of dubious value if many of the reasons given are viewed from the moral standpoint. Some of the boys state without reservation that the massacres, battles, strategies, and pillaging are the chief charms History has for them. Drake, Raleigh, Hawkins, Nelson, Frobisher, are their chief heroes. One boy is frank enough to state that he likes History because "it tells me how to make debased coinage"; whilst another finds interest in knowing "how kings die." The deductions some pupils make from the History lessons may be judged by the following two examples of many:—"History teaches us to be civil, because people were always fighting with one another"; and "We all cannot go like Drake and rob Spain, but we all can do our duty to our country." As already indicated, History makes less appeal to girls than boys, and several of the girls' papers indicated that they preferred the more peaceful aspects of the subject.

Many of the papers, in dealing with the subjects most disliked, gave much evidence of the physical strain children undergo. There was ample evidence that much work is exacted from pupils when they are really tired. But few pupils regard Drill and Singing as recreative subjects. This agrees with the experimental results given by Offner and others with regard to the fatigue caused by these subjects as compared with other school-subjects. A fair number complained that Reading made their eyes ache; and those conversant with the elementary schools will not be surprised to read that there were many complaints about having to raise hands continually to answer questions.

In conclusion, I wish to thank many head and class masters in the London schools and in South Wales for the facilities afforded me, and in many cases for valuable hints in interpreting the data.

EXPERIMENTS ON THE METHODS OF TEACHING READING.

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CONSIDERABLE attention has been paid of late to the question of the best method of teaching reading. In some papers read to the Educational section of the British Association held in Dundee last September, the value of the so-called "Look and Say" method was vigorously defended by several speakers, the Phonic method, which still largely holds the field in this country, being severely criticized.[1]

The following research was begun in the hope of contributing some further experimental evidence as to the comparative value of the two methods. The writer believes that, at the outset, he had no bias in favour of either method. As an ex-school teacher of seven years experience he did not under-estimate the value of the testimony of practical workers in the schools, though at the same time he felt the soundness of Dr. C. S. Myers' argument, viz., the absolute necessity of analysis of the words read if the child was to be able to apply his knowledge to the reading of new words.[2]

Method of Experiments with Students.

As a preliminary test some experiments were tried with two classes of students at the Training College, Dundee, numbering 24 students each. The plan adopted was as follows:—A passage of English prose was written in Greek characters, which were largely unknown to the students.[3] It will be seen that the conditions would thus approximate to those in which a beginner is learning to read. The symbols are strange to him, but once they are translated into word-sounds they are for the most part understood. The passage chosen was from an essay of R. L. Stevenson, and appeared as follows:—[4]

> *εκστρημ βισινες νέθερ ατ σχυλ ορ ατ κολιγ, κιρκ ορ μαρκιτ, ις α σιν οφ δηφεσεντ ναιταλιτε, ανδ α φακυλτε φορ ειδυλνεσσ ιμπλαισ α καθολικ απετιτ ανδ α στρονγ σενσ οφ περσοναλ αιδεντιτι.*

On a Monday morning, at 10 a.m., a lesson in reading the Greek was given to Class A, the Phonic method being used. Thus, each letter was pointed to, in turn, and its sound given by me and repeated by the class, and then at the end of the word the whole word was pronounced by me, and this also was repeated by the class. The length of time taken over the whole passage was noted by means of a stop watch, and it was exactly two minutes. The class had been previously told that they would be tested afterwards in the reading of words selected from the passage, and also with words previously unseen. Immediately after this lesson the tests were carried out as follows. A sheet of paper bearing one of the words included in the given passage was exposed before the class for five seconds. They were then asked to write down the meaning of the word. In this way sixteen selected words were exposed, being the sixteen longest words in the given piece. Then five unseen words (as before English words written in Greek characters but not included in the given passage) were exposed one at a time, also for five seconds each. This constituted what was called the Rapid Unseen test. Finally a sheet of paper, on which were written eleven words, was exposed for five minutes, and the students were allowed to write down their meanings at their leisure. This was called the Slow Unseen test. The words given were as follows:—

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[1] See the *School World* for November, 1912, "Method of Teaching Reading in the Early Stages," by B. Dumville, M.A., and "How Children Learn to Read," by Barbara Foxley, M.A.

[2] Indeed, Dr. Myers' argument, as stated above, would not be disputed by most upholders of the "Look and Say" method, cf., article on "The Teaching of Spelling," by E. J. Gill, this Journal, Vol. IV, page 310, for proof of such analysis being made by children taught by the "Look and Say" method.

[3] Most of the students already knew one or two of the Greek letters. But these were about equally distributed between the two classes. Two students who previously knew four Greek letters were not included in reckoning the results of Class A.

[4] Final sigma was purposely avoided in most words.

σαλορ βρυθερ ὁρσ φασινατε συγεστ οπερατε
κυκυμβερ σχημ ρυμ βισκιτ φητ

At the outset of the tests the students were told that some of the words given would be selected from the passage they had read previously, and that some would be unseen. But they were not told which was which.

On the following day the same passage was given to Class B.[1] This time, however, the "Look and Say" method was used. The sounds of the separate letters were not given, but the words were read by me as word-wholes, and repeated by the class. As before, exactly two minutes were spent over the piece, thus giving time for us to go over the piece twice, and part of it a third time. Exactly the same tests followed as had been given to Class A.

Before giving the results the question of the comparative intelligence of the two classes must be considered. As far as I could judge from my experience of the two classes, they were very much on the same level. In an examination on Experimental Psychology the "Look and Say" class did slightly better, averaging 53 marks out of a hundred, against an average of 50 for the Phonic class. An independent test with German words described below also indicated that the classes were about the same level as regards capacity for learning new words.[2] However, there is no clear proof of the equality of the classes as regards their ability to learn new symbols, so that no great emphasis could be laid upon this experiment if the results given by the two methods were not very strikingly different. Table I gives these results.

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[1] The students of Class A undertook not to speak of these tests to anyone outside their own class. If any information was given to Class B, it would, it should be noted, favour the "Look and Say" method.

[2] Five sentences in German (unknown to nearly all members of the classes) were exposed, read, and translated to the classes, word by word. Afterwards the sentences were dictated to the students, and their errors in spelling were counted. The average number of errors of the 24 women students in Class A was slightly above 4; that of the 17 women in Class B slightly above 3. All the women were Scots, and it was evident from their own testimonies that this frequently helped them. Nine of the ten men of Class B, however, were English or Welsh, and their errors numbered over 6 each on the average.

TABLE I.

Results of Students' Experiments. 24 in each class.

Nature of Test.	Class A. Phonic Method.	Class B. "Look and Say" Method.
Seen Words	180	156
Rapid Unseen	45	5
Slow unseen	113	53

The results certainly surprised me. My own anticipation had been that the Phonic method would probably score better with the Unseen words, but that the "Look and Say" would score more with the Seen words. In every test, however—Seen, and Rapid, and Slow Unseen—the Phonic method proved superior, in the Unseen about 200 per cent. better.

This result with adults would not, of course, justify us in assuming that the same would be true for children. The synthesis of separate letter sounds into word-wholes may be easier for adults. Accordingly the method was applied to several classes of school children.

Experiments with School Children.

A class of fifty children in an elementary school in Dundee was selected. The general rule in this school is that the children should be taught by the Phonic method. The average age of the class was eight years. The children were arranged in order of merit for Reading by their teacher. The class was then divided into two sections, in the following manner. The first child in Reading was put into Section I, the second child into Section II, the third into Section II, the fourth into Section I, and so on, so that the sections would be about equal as regards reading capacity.[1] A short story, given below, in English words written in Greek letters, was inscribed upon a large sheet of paper.

Α λιττλε βοι νας ρειδινγ νιθ ἱς φαθερ ιν α τραμ. Ας αλλ θη πλασες νερ τακεν θη φαθερ τωοκ θη βοι ον ἱς νηγ. Σωον αφτερ α λαδι καμ ιντο θη τραμ. Ας θη τραμ νας φουλ θη λιττλε βοι γοτ οφ ἱς φαθερς νηγ ανδ σεδ, Μα Ι οφερ ων μει πλασε.[2]

Section I were taught to read this by the Phonic method as described above. The exact time taken was noted (7½ minutes). Before the lesson the children were informed that they would be tested in the reading afterwards. Twelve words were selected from the given piece, and twelve new words were also chosen. They were all exposed, one at a time, for 10 seconds each (6 of the Unseen words for 15 seconds each).

The children were told that some of the words which were being shown to them were taken from the piece they had seen, and that some were new words, but they did not know which came first. The words used in the tests were as follows:—

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[1] I also had an order of general intelligence drawn up by the teacher. The average positions in this new order of the two sections, as divided above, were approximately equal.

[2] Here, as throughout the tests, I occasionally deviated from a close following of the usual spelling in order to make the material still more emphatically new, cf., the mute final γ in νηγ and the change of vowel in τωοκ, both troublesome points, especially for the Phonic children.

SEEN.		UNSEEN.	
λιττλε	φαθερ	ασκ	γας
Σωον	θη	ινκ	ση
πλασε	ιντο	πατερ	πιν
νηγ	ρειδινγ	κραμ	ταβλε
οφερ	τραμ	μη	ραθερ
υας	φουλ	φασες	βουκ

Each child was provided with a sheet of foolscap with numbers written on it in two columns, thus:

1	13
2	14
3	15
⋮	⋮
12	24

They were told to write the meaning of the first word opposite figure 1, or to put a line against figure 1 if they did not know what word it was, and so on. One or two children were observed by myself, or by one of the two teachers present, to be copying the Greek letters down, but a little further explanation generally made the task clear to them.

A few days after, Section II had a lesson on the same piece, but by the method of "Look and Say."[1] Each word was repeated after me by the class. After two or three such readings, several words were taken at a time. As with Section I, 7½ minutes were taken over the lessson, and this gave time to go over the piece eight times, the last time the children reading it off without any assistance. Section II were tested in exactly the same way as Section I. In marking the papers, a mark was allowed even where a word was misspelt, so long as it seemed to indicate that the child would have *read* the word correctly. The results are given in Table II.

TABLE II.

School X, Class A. Average age, 8 years.

	Section I. Phonic.	Section II. "Look and Say."
Seen words	134 ...	105
Unseen words ...	58 ...	5

Time taken, 7½ minutes.

Number of children, 24 in each section.

Again we find a striking victory for the Phonic method, especially in the Unseen test.

An *improvement in method* here occurred to me. It seemed possible that the test as it stood was hardly fair to the "Look and Say" method. In actual reading lessons much more ground would be covered by the "Look and Say" method than by the Phonic method. Thus more words would be seen, whereas in these experiments Section II were kept to one piece. Also it seemed likely that interest would slacken owing to the frequent repetition of the same story. Accordingly with the next class I gave two pieces to the "Look and Say" Section. Two-thirds of their time were still occupied with the same piece as that given to Section I (Phonic method), the remaining one-third being given to the new piece. In the new story I deliberately introduced four of the "unseen" test words, viz., *ση, ταβλϵ, ραθϵρ, βουκ*. The new piece also included 2 of the 12 test words already found in the first piece, viz., *θη* and *φαθϵρ*. Thus the "Look and Say" Section had these words repeated again in a new context, and they also saw 4 of the 12 "unseen" test words, all of which were unseen by the Phonic children. The results are given in Table III.

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[1] One could only rely on the difficulty of the work to ensure that no information of any value would be given by Section I to Section II in the meantime. If such information were given, it should be noted that it would favour the "Look and Say" section in every case.

TABLE III.

School X, Class B. Average age, 7½ years.

	Section I. Phonic Method.	Section II. "Look and Say."
Seen	130 ...	149
Unseen	65 ...	43

Time taken, 8½ minutes.

Number of children, 24 in each section.

The class was divided into sections on the basis of an order of general intelligence, drawn up by the teacher.

The change in method obviously caused a considerable change in results, though this change may be due partly to the fact that Class B was six months younger on the average than Class A.

In the Seen test the "Look and Say" Section did somewhat better, though they spent only two-thirds the length of time upon the piece that Section I spent upon it.

In the Unseen test, however, the Phonic Section did 50 per cent. better than the "Look and Say" Section, in spite of the fact that 4 out of the 12 "unseen" words had been already seen and read by the "Look and Say" Section in their second piece.

The experiment was repeated, exactly as with Class B, in another Elementary School, Y. Here again the method supposed to be followed in the usual class reading lessons is the Phonic method. Unfortunately I was unable to find a school in Dundee where the "Look and Say" method was used. Probably the results may have been affected through the influence of the method to which the children had previously been accustomed. But it will be seen later that the most striking superiority of the Phonic method was shown in an infant class in which the children have only been learning to read about one year. Furthermore, one can fairly assume that in no case is the Phonic method completely adhered to. I had especially some reason for believing that in some of the classes the "Look and Say" method was frequently used in practice, as it probably is by all teachers on occasions.

The children of School Y seemed to be drawn from poorer homes, on the average, than those of School X. The results of this class are given in Table IV.

TABLE IV.

School Y. Average age of class, 7½ years.

	Section I. Phonic.	Section II. "Look and Say."
Seen	30 ...	72
Unseen...	23 ...	20

Time taken, 9½ minutes.

Number of children, 18 in each section.

Division into sections based upon order of merit in reading.

Here for the first time the "Look and Say" method scores a striking victory in the Seen test, and does about as well as the Phonic method in the Unseen test, though here it must be remembered that 4 out of the 12 words "unseen" had been seen previously by the "Look and Say" group.

It should be noted that though the time taken over the reading lesson was one minute longer for School Y than for School X, Class B, the scores as a whole are much lower than they were for School X, even allowing for the fact that the sections in School Y only contain 18 children each as against 24 in School X.

A further improvement in Method.

At this stage it appeared to me that the experiment might be made to conform still more closely to the actual methods of teaching reading in the school. This time the change made the tests somewhat fairer to the Phonic method. In giving a lesson by the Phonic method no sensible teacher would think of presenting 12 or 15 entirely new symbols to a class in one ordinary reading lesson—much less in a brief term of eight or nine minutes. It seemed much fairer then to introduce only very few new letters to the children in the short lesson given. I therefore chose the letters ϕ, θ, ρ, δ, β New stories were prepared, and where the sounds corresponding to these letters occurred these letters were introduced, the rest of the word being written in ordinary English script. I also started the Phonic method lessons by writing these letters separately on the board and getting the children to repeat their sounds after me. (This time was, of course, included in the time of the lesson.) One of the two pieces used was as follows :—

Look at θat βiρδ wiθ his ϕine ϕeaθeρs. What a lovely ρeδ θea aρe. He will come anδ eat cρumβs ϕρom ouρ hanδs.

In my own writing these words appeared more uniform, as regards size and slope of the constituent letters, than they appear in print, where the size and slope of the Greek letters mark them out more distinctly from the others.

A third similar short piece was also used for the "Look and Say" Section. I now returned to School Y, and taking the same class as that taught before two weeks previously, gave them a second lesson, this time introducing only the five selected letters.[1]

The test words numbered 18, 6 being unseen to both sections, 6 seen by both sections, and 6 unseen by the Phonic Section but seen by the "Look and Say" Section in the extra piece read by them but not read by the Phonic Section. These extra pieces, as before, occupied one-third of the time. The test words were as follows :—

SEEN.	Seen by "Look and Say" Section Unseen to Phonic Section.	UNSEEN.
φρom	δooρ	φiρn
βiρδ	δeaφ	βeδ
wiθ	motoρ	φaρ
θea	heaρ	δeaθ
ρeδ	θeρe	φρee
φoρ	aφρaiδ	θis

In the Phonic lesson only those words were sounded letter by letter which contained a Greek character. The other words in English script were read as word-wholes. With the "Look and Say" Section, after the two pieces had been read, those words which contained one or more Greek letters were selected and read again. As before, two-thirds of the time was spent upon the pieces which the Phonic Section had read.

The results are given in Table V.

TABLE V.

School Y. Average age of Class, 7½ years.

	Section I. Phonic.	Section II. "Look and Say."
Seen	66 ...	28
Seen by "Look and Say" Section, Unseen to ... Phonic Section	59 ...	30
Unseen	74 ...	24

Perhaps the most striking fact here is that the Phonic Section, even with the words unseen by them but seen by the "Look and Say" Section, actually scores about twice as many as their rivals. With the words unseen by all the victory is even more complete for the Phonic Section. Thus the apparent proof of the suitability of the "Look and Say" method for the duller children of School Y (as shown by their previous test) disappears when the tests approximate more closely to the conditions of actual teaching.

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[1] This second time the class list, before division into two sections, was drawn up in order of general intelligence as estimated by the teacher and head master in consultation with the previous teacher of the class. I gathered from this list that the two sections in the previous section were fairly equal on the average in general intelligence, according to this estimate of the teachers.

Experiments on an Infant Class.

It seemed possible that it might be objected, "Yes, the Phonic method may be better for children who have already made some considerable progress in reading, but for beginners and for very young children the "Look and Say" method is more suitable."

The last experiments were therefore done in an infant class in School X. Here the children had only been learning to read about a year.

As in the previous experiments only the five letters *φ*, *θ*, *ρ*, *δ*, *β*. were introduced. To avoid the difficulty involved in the children having to write the meaning of the test words, the following plan was adopted: The head mistress of the infant department, the mistress of the class, the head master and myself took the children individually. The test words were shown them one at a time, and they simply had to read them quietly to one of us, the score of each child being kept. Fifteen seconds only was allowed for reading each word. Every quarter-minute I gave a signal that the next word was to be taken. As each child finished his test he was sent into the playground.

The results of this infant class are given in Table VI. The test words were the same as those used for School Y in the preceding test, except for the *seen* words, which were as follow:—

aφteρ seδ θe ρiδing tρam φaθeρ

In this experiment the main piece used with both sections was the same as that given to Class A, School X, with the exception that only the five selected Greek words letters were used.

TABLE VI.

School Y, Infant Class. Average age, 6½ years.

	Section I. Phonic.	Section II. "Look and Say."
Seen	62	43
Seen to "Look and Say" Unseen to Phonic	40	15
Unseen	52	6

Number of children, 24 in each section. Class divided on basis of general intelligence as estimated by teacher.

Here the most striking figures are those of the entirely unseen test—52 against 6. But it should also be noticed that even with the words seen by the "Look and Say" but quite unseen to the Phonic Section, this latter section scored 40 against the 15 of the "Look and Say" Section. These last two experiments—in which only five new letters were introduced in the reading lesson—certainly seem to be the fairest of these tests of the two methods. It is noteworthy that it is in these two tests that the superiority of the Phonic method is most marked.

General Intelligence and the Use of the Respective Methods.

We have already remarked that both sections of the class in School Y (Table IV) scored far less in the reading tests than did a class of the same age in School X.

While the total scores of both sections of Class B, School X, is 387, that of the class in School Y (when raised proportionately to the number of the class) is only 193. This confirmed my general impression that the class in School Y were much less intelligent than Class B of School X.[1]

Now it is notable that this comparatively unintelligent class at School Y is the only class in which the "Look and Say" method did appreciably better than the Phonic method, at least when all the letters were written in Greek script.

Furthermore, it appeared on further analysis of results that the general superiority of the Phonic method, especially in unseen work, was due to the *upper* halves of the classes. With the lower halves of the classes the "Look and Say" method proved almost as effectual, or even more effectual than the Phonic method in the *seen* work, though less effective as a rule in the unseen. This is shown in Table VII.

TABLE VII.

Showing Comparative Scores of Upper and Lower Halves of the Sections.

		Section I. Phonic.		Section II. "Look and Say."	
School X Class A	Upper half of each Section.	Seen	70	Seen	45
		Unseen	28	Unseen	10
	Lower half of each Section.	Seen	47	Seen	54
		Unseen	24	Unseen	3
School X Class B	Upper half of each Section.	Seen	88	Seen	84
		Unseen	42	Unseen	25
	Lower half of each Section.	Seen	39	Seen	59
		Unseen	22	Unseen	18

It will be seen that in the case of Class A the upper half of the Phonic Section is entirely responsible for the superior score of the section as a whole in the Seen test. If we only take the *lower* sections of the two classes, the "Look and Say" method actually proves superior for both classes as regards *seen* work.

With the improved method of only including five letters in the lesson, this *comparative* improvement[2] of the work with the "Look and Say" method in the lower half of the class was much less marked, though still apparent. On the whole it would seem that the Phonic method is less likely to prove superior as we descend the scale of general intelligence. This is confirmed by the testimony of several teachers that they have to fall back upon the word-whole method with the very dull children, at least for words of more than three or four letters. This, I suppose, is the common experience of all who have to teach the early stages of reading to very stupid children.

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[1] Incidentally this provides an interesting comment upon one aspect of our educational organization. These two classes in the two different schools were exactly the same grade, and they would probably be expected, by the inspectors, to do equally good work, for the difference in average intelligence between the children of the two schools was not generally recognized. Indeed, it was denied by the head master of School X, who was also acquainted with School Y.

[2] i.e,, when compared with the corresponding half of the Phonic Section.

We may now state the **General Conclusions** as far as one can judge from this series of experiments.

1. There seems to be nothing so inherently difficult, even for little children, in the synthetic work involved by the Phonic method as has been asserted by some of its critics. Such synthesis was done readily by infants of six years of age, even with an unseen word like aφρaiδ, in which the three Greek letters were entirely unknown to them previous to the eight minutes lesson.

2. Children taught by the Phonic method do better than those taught by the " Look and Say " method, both in reading words previously seen and words previously unseen, and even in some words seen by the " Look and Say " children but not seen by the Phonic children.

3. There seems to be some evidence, however, that for very dull children the " Look and Say " method is more efficient.

All these conclusions can only be stated in reference to the conditions under which these reading lessons took place, namely, that they were chiefly concerned with *new*, and therefore interesting, letters, and also that the lessons were very short ones.

Previous Experiments upon the Methods of Teaching Reading.

Such a complex question as that with which we are concerned cannot, of course, be settled by any one set of experiments, even if they stand unchallenged. This last is not the case, indeed, for two previous investigators have come to different conclusions from that to which the above experiments have led us. In his interesting article on the Methods of Teaching Reading,[1] Mr. E. J. Gill described experiments of his own bearing on the same problem. They have the great advantage of testing the results of the methods as actually applied in school teaching.

Readers must be referred to the article in question for details of the experiments, but as Mr. Gill's conclusions differ markedly from my own, and some comment seems to be called for here to explain, if possible, this discrepancy of results. Mr. Gill tested children of about the same age from three schools—X, in which the ordinary Phonic method was used; Y, in which the Dale method was used; and Z, in which the " Look and Say " method was used. The average speed of reading was much greater for School Z than for Schools X and Y.

Unfortunately, Mr. Gill gives no evidence as to the comparative intelligence of the children in the three schools mentioned. It seems possible that the superiority of the reading of School Z may be partly due to superior general intelligence of the children there. We have already seen what an enormous difference, in such tests as our own, can appear between the results of two schools generally supposed to be about the same level as regards the intelligence of the children.

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[1] This Journal, Vol. I, p. 243.

A further and highly important factor which has to be considered is the teacher. It is possible that the teaching at School Z was more efficient than that at Schools X and Y. The fact that the new method had been adopted in School Z would at least suggest that the teachers were alert and progressive there to a degree beyond the average. At the same time it is only fair to add that the children at Schools X and Y had been learning reading two years as against sixteen months in the case of the children of School Z.

It seems, however, dangerous at least to draw any confident conclusions from experiments as to different methods, when the different methods are applied by different teachers and in different schools, possibly differing in the average intelligence of their children.

It also appears to me that Mr. Gill's method of giving the children passages in which all the words were run into one another would probably favour the children of School Z (who had been taught to read sentence-wholes), especially as the test was merely a speed test.

Mr. B. Dumville, in his paper at the British Association, 1912, described some experiments of his own, the results of which, on the whole, also pointed in favour of the "Look and Say" method.[1] It should be noted, however, that in the case of one of the two classes tested, the section trained by the Phonic method did better in the Unseen test than the "Look and Say" Section, both as regards speed and accuracy.

Further, unless there was some method of ensuring that the two sections of each class were approximately of the same general intelligence on the average, no inference can be drawn as to the influence of the different methods used, as we have already seen. Probably Mr. Dumville made some such provision, though unfortunately he does not state upon what basis the classes were divided into the two sections.

Again, the experiments were really tests of methods of *learning*, not of teaching. The alphabet of the Association Phonetique Internationale was used. The "Look and Say" Section were given a list of words printed in the phonetic transcript, with the ordinary spelling opposite, and they were told to learn these words as word-wholes. The Phonic Section had at first a list of the new symbols with their sound values opposite, and a sample word in each case. After ten minutes they had the same sheets given to them as the "Look and Say" Section had already received. "They were instructed, however, to use them for the purpose of practising and testing their powers of deciphering."

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[1] See the *School World*, November, 1912.

Now it seems to me that the putting of new symbol to symbol (or sound to sound when represented by new symbols) is by no means easy for the child in absence of the teacher's guidance and help, at least *at the start*. It is doubtless just here that the good teacher does a great deal for beginners in reading. On the other hand, the association of the new word-whole with its meaning opposite would not need so much the teacher's help.[1] This fact, then, may account partly for the discrepancy between Mr. Dumville's results and those of the experiments in Dundee.

It is possible also that the material used may partly account for the difference of results. In the case of the phonetic alphabet it seems possible that there would be a fair number of words of which the general form would very closely resemble the general form of the same word in ordinary script, so that the "Look and Say" children, only concerning themselves with the word-wholes, would have little difficulty in reading them at once. On the other hand, the Phonic children, taking them letter by letter, as instructed, would find in individual letters marked differences from the ordinary letter. Serious difficulty for the Phonic children would arise particularly in the case of those phonetic symbols, which are merely ordinary letters inverted, as for example, ʌ for u in "much," ə for i in "bird," and ɔ for o in "long." In such cases the Phonic children would first have to get rid of the thought (and sound) of the letter in its usual form and usage, i.e., they would first have some actual *unlearning* to do before learning the significance of the new symbol. This, it seems to me, would cause confusion, and add to the time taken for learning. This argument seems confirmed by the remarkable case of one word in my own experiment. The one and only word with which the "Look and Say" Sections did appreciably better than the Phonic Section (without seeing it more frequently) was the word **Σωον**. The score with this word was 5 for the Phonic Section, 25 for the "Look and Say" Section. Now, the general form of this word does not differ greatly from Soon. But there is little doubt that the Phonic children were puzzled by the letter *w*, which would appear to them to be a w.[2]

Lastly, it will be remembered that, in the Dundee experiments, we found that the Phonic method scored vastly better when only 5 new letters were introduced in the course of one lesson, and we concluded that 12 new symbols were far too many to be presented to the children in one lesson—as would, of course, be realized in ordinary school teaching. Mr. Dumville, however, gave his children some **15** new symbols at one sitting, and this may be a third and probably the chief reason why our results differ so much.

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[1] No doubt the corollary to this is that the Phonic method involves more and harder work on the part of the teacher, which, I suppose, few would dispute.

[2] I introduced this change of *w* for o purposely, as I did various other irregularities in the Greek spelling, wishing to make the new script irregular because our own is, and also not to make it always a close imitation of the English spelling. On the whole, I believe such alterations would prove more troublesome when tackled by the Phonic method than when the words were read as word-wholes.

I should add that Mr. Dumville's method was superior to mine in that the test was an actual reading of a paragraph, thus approximating more closely to the real conditions of reading than did the deciphering or translating of single words, as given in the Dundee experiments.

Theoretical arguments as to the two Methods.

In conclusion, we may very briefly discuss two theoretical arguments in favour of the "Look and Say" method.

1. Some critics of the Phonic method have spoken as though the Phonic method were only of value in reference to words which are regularly spelt. But even with irregularly spelt words the clue to the whole word may be given by a few of the letters, and with their aid and that of the context, a word may be guessed rightly, where without the aid of these few letters the context might have been insufficient for a correct reading.

Some striking examples in the infant tests confirm this contention. Among the test words were the words δεαφ and δεαθ. The mistress said, before the tests were done, that the children would not be able to do these words as they had not had the diphthong ea. Yet eight of the children of the Phonic Section read δεαφ correctly, and four read δεαθ, though none of the "Look and Say" Section read either word. Here, I take it, the letters δ and θ or φ, being known by the Phonic children, gave them the clue to the word, the irregular ea proving no insuperable object.

This may surely take place with many irregular words, so that even if it be true that three-quarters of our words are irregular, it does not follow that the Phonic method of word reading can only be applied to the remaining quarter.[1]

2. Undoubtedly it would seem that the chief argument in favour of the "Look and Say" method is that it gains and holds the interest of the children more readily. The reading proceeds more rapidly, and interest in the matter is not lost in slowly plodding through the words letter by letter. Furthermore, as the speed of reading is greater the sense of the matter will be more readily apprehended, and to this extent the context will be a better clue to any difficult word.

But it may be seriously questioned whether such interest in the matter is always essential at the earliest stages of reading, at least supposing that the children have a sufficiently capable teacher. Everyone who has observed little children must have noted the keen pleasure many of them take in the mere deciphering of separate words and names. When this stage is past no doubt much depends upon the teacher. Some may be unable to retain the interest of the children when using the Phonic method. But with others the interest remains keen. I saw one lesson given by the Dale method in School Y, and the children were obviously very keen, and equally interested in the first part of the lesson, which consisted in deciphering individual words, as in the latter part in which a story was read. The presence of a stranger in the room may, of course, have had something to do with this, but the head master's report as to the striking progress made by this class in reading suggested that this keen interest was normal.

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[1] Mr. Dumville (Op. cit. p. 408) asserts that three-quarters of our words are spelt irregularly. It is difficult for two independent persons to arrive at similar conclusions on such a matter owing to the lack of a standard as to what is irregular. I may say that, of the 80 words in the paragraph in which Mr. Dumville makes this assertion, I make out 50 per cent. to be regularly spelt. In a passage of 92 words in "Rob Roy," chosen at random, I estimated that nearly 70 per cent. were regularly spelt.

Too great an interest, indeed, in the story which is being read seems undesirable from a psychological point of view, even when the "Look and Say" method is being used.[1] It may tend to divert attention from the words themselves and cause, not only wild guessing and misreading of words, but also such a very fleeting attention even to words properly read, that they are not remembered on future occasions. One does not advance one's knowledge of a foreign language best by reading highly exciting novels in that tongue. On the other hand, if the student is so indifferent to the foreign language *as such* that he will read nothing but exciting novels in it, then, of course, it is the best thing that he should have these, if the language is to be mastered.

And this has an obvious application to the question at issue. At the point at which the interest of the child seems to be failing it is doubtless well to seek to hasten the speed of reading. The ideal plan with the average child would seem to be an alternation of the two methods, as indeed both Miss Foxley and Mr. Dumville seem to admit in certain passages in the papers mentioned above.[2] But the experiments recorded in the present paper certainly suggest that, *as long as interest can be kept sufficiently keen*, the Phonic method gives far better results even for a short given period of time. One would expect the superiority of the method to come out still more strongly after a series of longer lessons, as the number of new individual letter symbols is small while the number of new word-combinations is indefinitely large. On the other hand, the interest in the symbols as such would doubtless decrease as time went on.

Finally, the experiments support the contention that for very dull children the "Look and Say" method is the better, and it may be the only possible method. No doubt it is also the better method for the very dull teacher.

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[1] I refer, of course, to reading lessons in school where it is desirable that the child shall be storing up a knowledge of words that he will be able to apply when reading alone.

[2] Op. cit. pp. 411 and 413.

A TRIAL OF BINET'S TESTS ON FIVE-YEAR-OLDS.

By B. DUMVILLE, M.A.

Being desirous of comparing two parallel classes in an infant school with respect to general ability (as a preliminary to another experiment) I devoted two weeks to the task, using Binet's Tests.

The revised series, as given by Miss Katharine L. Johnston in an article in a former number of this Journal[1], was the one employed. Other articles on the same subject in this Journal[2] by Miss Johnston were also found most helpful. Needless to say, Binet's articles in the *Année Psychologique*[3] gave much additional assistance. Lastly, the articles of Huey[4] and of Terman and Child's[5] in the *Journal of Educational Psychology* were of considerable value.

The last-mentioned article was of special value, because it indicated the limits of the tests to which it was likely that any child of the age now in question would be able to respond. In conformity with these indications, I prepared the tests from three to eight years (inclusive) of mental age.

Having practised applying the tests on a few odd children of about the same age beforehand, I presented myself at the school[6], by previous appointment, on the first Monday of the fortnight in question. The Head Mistress, Mrs. M. M. E. Bowler, had kindly arranged for me the exclusive use of her private room for the whole fortnight. The children were brought up to the room one by one, and, except in a few cases where a teacher sat "in the background" to watch the testing, I had each one entirely to myself. By a few pleasant remarks and simple questions I was able to put them entirely at their ease, though in a few cases a sweet was necessary to assure them of my complete friendliness, and in one it was essential to have present a comrade who had already passed the tests in order to impart the requisite agreeableness to the situation.

In most cases I began with the tests for *five* years, and proceeded onwards until those of *eight* years had all been given. In a few cases, in which there was the appearance of more than usual intelligence, I saved time by beginning with the tests for *six* years. In those cases in which a child failed to satisfy in all tests but one of any year I went back to the tests for *four* years, and sometimes to those for *three* years.

In computing the results, I made one change in the method usually adopted. It is the custom to add one year to the mental age for any *five* tests passed above the year in which satisfaction is given. But it seemed to me that if a child passed *four* tests beyond the age in which he gave satisfaction, he was not necessarily a whole year behind the child who passed only one more. And the same argument, although somewhat weaker, could be advanced for the child who had passed *three* extra tests. Accordingly I allowed *half a year* to those children who passed either *three* or *four* additional tests.

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[1] November, 1911.

[2] November, 1910, and March, 1911.

[3] For the years 1905, 1908, and 1911.

[4] Vol. I, pp. 435 ff.

[5] Vol. III, pp. 61-74

[6] L.C.C. School, Infants' Dept., Haggerston Road, London, E.

In all, 89 children were tested. All of these were five years of age (i.e., between five and six) except four, who had just turned six.

The general results were—

Mental age in years...	4½	5	5½	6	6½	7	7½
No. of children attaining this level...	3	8	7	34	7	27	3

The smallness of the numbers for the mental ages of 5½ and 6½ is to be accounted for as follows :—

(1) In cases where a child had passed a few extra tests, he was only given the credit of an extra half-year for them if there was *no doubt* about his claims.

(2) Since only those answering *three* or *four* extra tests could obtain the credit of an additional half-year, the majority of those passing any tests beyond the age in which they give satisfaction must go to swell the number of either the year immediately above or the year immediately below any intermediate half-year level.

Sinking the intermediate half-year numbers into those just below them, we get the following :—

Mental age in years	4	5	6	7
No. of children attaining this level ...	3	15	41	30

This gives an average mental age of 6·1 years. Such an average indicates that Binet's Tests are a little too easy for our English children. This has already been noted by other investigators[1]. Binet was careful to point out that his tests were made with poor children. But in the present instance the school was one of "special difficulty."[2]

Either, then, our children are on the average a little more intelligent than French children, or Binet's Tests require some further revision, at any rate in the lower part of the scale.

The latter probability is further emphasized by an examination of the answers for the mental ages of six and seven. In the first place, the large number of children who attain the level of seven years according to the scale (30) suggests that there is not the same great difference between the tests for six and seven as there is between those for the ages five and six. An analysis of the answers to the tests for six and seven years confirms this assumption. The following table gives the tests, as I indicated them on the sheets which I prepared for each child, together with the number of correct answers to each :—

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[1] See, for instance, the article of Terman and Child's as referred to above.

[2] In which the L.C.C. pays the assistant mistresses an extra amount of £7 10s. 0d. per annum on account of the trying nature of the work.

Mental Year.	TEST.	No. of correct answers out of 89 in each case.	
6	i Is it morning or afternoon? (a.m.) ... Is this afternoon or morning? (p.m.) ...	72	Total, **276** (out of a possible 445).
	ii What is a fork? Table? Chair? Horse? Mother? (3 right) ...	44	
	iii Draw this for me (diamond shape) ...	55	
	iv Count how many halfpennies there are here (13) ...	34	
	v Which of these two faces is the prettier? (3 right) ...	71	
7	i Show me your right hand. Show me your left ear ...	56	Total, **272** (out of a possible 445).
	ii Tell me what you see here (pictures) ...	48	
	iii Put this key on the chair over there. Then shut the door. Then bring me that box ...	82	
	iv (3 pennies and 3 halfpennies). I want you to put your finger in turn on each coin, and as you do it count aloud how much you have, always counting in halfpence ...	16	
	v What colour is this? (No mistake) ...	70	

It is obvious from the totals (276 and 272) that the tests for these two years are *as wholes* of approximately equal difficulty. The fact that *no fewer than ten children passed four of the tests for seven years after failing to give satisfaction for six years*[1] emphasizes still further the unsuitability of the tests as they stand. It should be noted also that Test iv for seven years appears to be very much more difficult than the others. Viewed from the standpoint of the number of correct answers received, it should be classed with the tests for eight years, three of which obtain many more correct answers. If this were done, the remaining tests for seven years would be actually easier as a whole than those for six.

It may be well at this stage to give the number of correct answers for all the tests. In doing this, I have had to be satisfied with approximations to the totals for five years. Nine children were not tested at this age. I have, however, supposed that their performances would have been as good on the average as those of the 80 other children who were tested. As a matter of fact, they would probably have been slightly superior, though very little. The following table, then, gives the

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[1] This result is most remarkable in view of such statements as the following:—" If the series did not form a hierarchy it would frequently happen that a child would pass successfully the tests for, let us say, seven years, and yet fail in some assigned to the level of six or five years. Binet reports that in seventy records no such instance occurs."—Clara H. Town, Ph.D., " The Binet-Simon Tests in their application to Defectives," *Illinois Medical Journal*, August, 1912.

No. of Correct Answers for Each Test.

5 years.					6 years.					7 years.					8 years.				
i	ii	iii	iv	v	i	ii	iii	iv	v	i	ii	iii	iv	v	i	ii	iii	iv	v
79	82	73	88	50	72	44	55	34	71	56	48	82	16	70	38	0	20	0	30

Now, if these numbers be arranged in order of magnitude, we get the following :—

88	82	82	79	73	72	71	70	56	55	50	48	44	38	34	30	20	16	0	0
4 years ?			5 years ?					6 years ?					7 years ?			8 years ?			

The mental years to which it is now tentatively suggested that the tests should belong are here indicated. It is not claimed that finality is reached, though the fact that such a large number of children *of the same age and in the same school* have been tested lends some support to the suggestion, especially in the cases of the tests for five and six years.

The fact that three tests were passed by *nearly all* the five-year-olds in a school *of special difficulty* would lead one to assume that they are quite easy for children of five, and might therefore be passed by a large proportion of normal *four*-year-olds.

The five tests which are each passed by well over three-quarters of these children would appear to be the appropriate ones for five years.

The great gap between the five tests just referred to and the next five in order of successful answers is very remarkable. And it certainly supports the suggestion that if the former tests are assigned to children of five, the latter are appropriate for those of a year more in mental age.[1] The tests for five and six years, as re-arranged, would be as follows :—

5	i Which of these two boxes is the heavier ? (2 right to pass) 3gr. and 12gr. 6gr. ,, 15gr. 3gr. ,, 12gr. (repeated)
	ii Say what I say : " My name is John. What a naughty kitten ! " (No mistake allowed.)
	iii Is it morning or afternoon ? (a.m.) Is this afternoon or morning ? (p.m.)
	iv Which of these two faces is the prettier ? (All right.)
	v What colour is this ? (4 colours ; no mistake allowed.)
6	i Show me your right hand. Show me your left ear.
	ii Draw this for me (diamond shape).
	iii Put those together so as to make the same shape as this (oblong card—another cut diagonally and the halves turned round).
	iv Tell me what you see here (3 pictures—*description* required in at least two cases).
	v What is a fork ? Table ? Chair ? Horse ? Mother ? (Definition by use—3 good ones to pass.)

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[1] For further particulars of the tests, see the earliest of Miss Johnston's articles referred to above.

If Binet's Tests could be submitted to similar trials with similarly large numbers of children of the same social standing at each separate age, further changes might be found necessary.

One general criticism of the Tests may perhaps be of some value. It is impossible, in concrete tests as distinguished from the more analytical ones of the psychological laboratory, absolutely to separate general ability from special knowledge. Binet himself has confessed that in his endeavours to distinguish between certain ages (e.g., seven and eight) he had to fall back on special knowledge in some of the tests. This is very unfortunate. It cannot, as already stated, be completely avoided. But it seems to me more widespread than Binet suspects. *Money*, for instance, is a thing with which children from different homes vary very much in their familiarity. Some children of four can readily name most common objects (as in Test ii for that age in the revised series of Miss Johnston), but they are not sufficiently familiar with halfpennies and pennies to be able to state at a glance whether a given coin is a halfpenny or a penny. To take a similar example from adult life, King George V would probably be more confused in making small purchases and getting the right change than a washerwoman of average intelligence. There is, of course, no objection to requiring a child to count a number of similar coins. But when the test turns on the value of different coins (as in Test iv for seven years) it is a question rather of special knowledge than of general ability.

A similar criticism may be made on the first question of Test i for eight years. Many children affirmed that they had never seen a butterfly. It was consequently futile to ask for the difference between a butterfly and a fly. Perhaps a *horse* and a *donkey* would be more suitable objects for comparison in this case.

And with regard to the drawing of figures, similar remarks are necessary. The children in many of our English infant schools never use a *pen*. Unless, therefore, they have used one at home, they are at a great disadvantage. A pencil might well be allowed in the tests. If necessary, the standard of correctness required could be raised somewhat.

Lastly, some of the wording of the questions requires careful revision. It has been framed by those who are without sufficient daily experience of poor children to know exactly what appeals to them. In some cases a strange word or expression produces such inhibition of thought that the child appears much less intelligent than he really is. For "What is *missing* in this face?" I found it better to substitute "What is *left out* in this face?" Only those who are thoroughly familiar with little children of the poorer classes can appreciate the importance of such a small change. "Which of the two faces is the prettier?" seems quite clear. But unfortunately these children are accustomed to use *prettiest* in such cases. And while I give place to no one in my desire for correct though simple English throughout the school, I feel that we ought not to let this question, however important, interfere with our testing of general ability. If we disturb the child's present habits of thought and speech, we are in danger of spoiling his performance. By all means let us endeavour to get things changed for the future. But at the moment of these tests we must take them as they are. Either, then, the question should be, "Which of the two faces is the *prettiest ?*" or we can adhere to correct English by saying, "One of these faces is prettier than the other. Which is it?"

It may be interesting to mention that in one of the classes I got the teacher to arrange the children in order of intelligence according to her opinion of them. She did this without any knowledge of the results of my tests. I myself made out a similar list based on my tests, i.e., I not only arranged the children in the order of their mental ages, but within each age I examined the individual results as carefully as possible, and placed the children in definite order. This I did without any reference to the teacher's list. The correlation between the two lists was, according to Spearman's Foot-Rule, ·43, or, translated into Pearson's Coefficient, ·62. As examples of serious differences between the two lists, I may mention that the child whom I placed at the top was fifteenth on the teacher's list (out of 44 children in all), and was described as "average," while a child who was thirty-first on my list was twelfth on the teacher's list, and was described as "bright."

There are various special reasons for so much divergence. In the first place, the teacher had only taught the class for six months, and some of the children had not been attending school during the whole of that time. Secondly, the "work" in infant schools has changed in its general character very much. Careful examination of each child is not so common as it was formerly. But perhaps the most important reason is that, under such circumstances as those just specified, the temperament of the child plays a large part in determining the opinion of the teacher as to his intelligence. The sanguine, sociable infant is likely to get more credit for general intelligence than he deserves, while the melancholic or phlegmatic child is in danger of being under-rated.

In conclusion, it may be mentioned that the two parallel classes tested gave very similar results. One of the classes contained 45 children. Their average age was 5·7 years, and the average "mental" age, according to Binet's Tests (and neglecting the half-years already referred to) was 6·2 years. The other class contained 44 children. The average age in this case was 5·6 years, and the average "mental" age, calculated as before, was 6 years precisely. In the former case, therefore, the "mental" age was ·5 of a year in advance of the real age, while in the latter case it was ·4.

ANALYSIS OF THE SPELLING ERRORS OF ADULTS.

BY ROBERT R. RUSK, M.A., B.A. (Cantab), Ph.D.

AS a method of introducing to students in training the subject of the psychology of spelling, an investigation into, and classification of, the mistakes made by the students themselves suggested itself. A more profitable course, it might be supposed, would be to get students to collect the mistakes made by pupils of the school classes to which they are attached; but the students' own mistakes are of greater interest to them than the mistakes of their pupils. This procedure has likewise the advantage that it leaves to the students the task of making the application to the pupils' work of the principle of classification and cause of error; that such application is made was confirmed by the fact reported to the writer, that after the subject was discussed in the class on Principles of Teaching, the students in their records of school practice spontaneously offered explanations of the errors met with in the work of the school pupils.

In attempting to classify mistakes in orthography nothing is to be gained, we believe, by adopting the usual procedure of dismissing the subject by referring errors to differences in types of imagery—visual, auditory, motor, &c.; for most adults belong to the mixed types, and no child has as yet been found who can be regarded as representative of a pure type. Investigation into the imagery used in spelling will, we expect, disclose the fact that a special type of imagery is evolved by individuals for this work.

The following classification is here presented in the hope that it may lead others to investigate the subject, to improve on the classification suggested, and to publish more appropriate illustrations than this investigation afforded. The material on which this paper is based was collected from examination answers, the students being unaware that the examination work would be used for this purpose.

Errors in orthography fall, it appears, into two main classes: (i) those due to defective capacity for expression; (ii) those due to faulty apprehension.

In the former case the word has been properly apprehended, but from one cause or another—fatigue, excitement, &c.—the attempt to give it correct expression fails: it may even be expressed correctly in oral form, and nevertheless be reproduced wrongly when expressed graphically. Most of the mistakes make by students belong to this class, and there appear to be three grades of such mistakes, or three sub-classes:—

(i) words not completed—

e.g.: "an" for "and,"
"the" for "then," &c.

(ii) words wrongly completed, i.e., where there is substitution of a part of a word for the correct ending—

e.g.: "was" for "way,"
"mechanical adv*ice*" for "mechanical advance,"
"v*iolent* studies" for "valuable studies."

To this type, we believe, belong such mistakes as "there" for "their," especially where the former follows closely on a "here," and "principle" for "principal": such errors may not be due, as we in ignorance are uncharitably led to assume, to inability to distinguish the correct use of the relative terms.

(iii) substitution of words having little or no apparent connection one with another—

e.g.: "By those *you* have to draw"
for "By those who have to draw."

The causes of errors of these types are not far to seek: they are due to inattention, fatigue, or over-pressure. The first class, uncompleted words, is the result of the shifting of attention from the word in process of formation to the oncoming words, or may be the result of a concentration of attention on the content to the neglect of the form. Such mistakes will readily be noticed on reading the written passage, and in order to avoid them, students or pupils need only be advised to re-read the passage, paying attention to the spelling.

Mistakes belonging to the second sub-section may likewise be attributed to lack of concentration of attention on what is being written, and when occurring frequently indicate a condition of fatigue, or, in examinations, excitement. Such "pranks o' the pen" are due to the fact that when attention is not sustained throughout the writing of a word, better established associations take the place of the correct forms; thus the writing of "*ad*" leads to the writing of "advice" instead of the wanted "advance." Errors of this type are usually noticeable by the writer himself on reading what has been written. When they are widely distributed over a class, general fatigue may be suspected; and when exceptionally frequent in the work of a single pupil, such a pupil may be found to be specially susceptible to fatigue.

When words having no apparent connexion with the intended words are written, we have reached the stage of fatigue or over-pressure which goes by the general name of "aphasia." A teacher who is worried or overworked may find himself addressing a pupil by the name of another member of the class. This is the same phenomenon in another sphere. Such mistakes in writing, "agraphia," are not to be attributed to carelessness—the one cause of all the school errors, according to some teachers, just as the cane is the one cure—for such errors occur frequently in carefully-executed essays. Even when he is asked to read the paragraphs in which they occur, they are not usually noticed by the student; and when his attention is directed to them, and he is asked their cause, he is usually quite at a loss to offer any explanation. When they occur frequently, they should be regarded as indications of over-pressure or liability to breakdown, and the student should be referred to the medical officer; in the case of a male student who dare not be accused of overworking, an inquiry into his consumption of tobacco may help to account for his condition.

The second main class of mistakes is due to faulty apprehension or learning, caused by insufficient analysis of the word. The apprehension of a word which is presented auditorily may be wrong, and this for one of two reasons: either the person speaking it may not pronounce it correctly, or it may be properly pronounced but the phonetic analysis of the word by the hearer may be imperfect. When the word comes to be reproduced, it is written as it is supposed to have been pronounced or heard. Thus we get

"dependance" for "dependence,"
"inventries" for "inventories,"
"corolation" for "correlation,"
"illigitimate" for "illegitimate,"
and "alright" for "all right."

Clear and exact enunciation on the part both of teacher and taught would help to remove these errors.

We also rely on phonetic analysis for words which are not regular. Thus arise

"oposed" for "opposed,"
"reallity" for "reality."

In an American investigation 76% of the mistakes in spelling of college students is referred to this cause[1], and a consistent orthographic system, like that suggested by the Simplified Spelling Society, would remove these errors. If instead of relying merely on auditory presentation we had the words presented visually, the percentage of such mistakes would be reduced. Lecturers should remember that technical terms in new subjects, and proper names, especially foreign names, should be written on the blackboard, otherwise they may be written phonetically.

Visual presentation, however, does not necessarily secure exact apprehension, for the visual analysis may be inadequate. To this cause may be attributed such mistakes as

"ei" for "ie,"

or doubling the wrong letter—

"mettaliferous" for "metalliferous,"
"paralell" for "parallel,"

where the total visual form remains practically unaltered by the substitution.

To secure correct visual apprehension it is not sufficient merely to see the word, but exact analysis is usually guaranteed only by copying out the word. There does not seem to be any special virtue in the motor experiences and imagery involved in or resulting from the transcription; but the copying implies that attention is centred on the word for a considerably longer period of time than would naturally be the case with merely visual apprehension, and an exact knowledge of the arrangement of the letters is necessary for correct transcription.

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[1] *Jr. of Educ. Psych.*, II, 215.

A consideration of mistakes on the above lines will be found to serve as an introduction to the treatment of the German workers on orthography, Lay, Lobsien, and others. It should, however, be noted that by confining our "sample" to students in training, certain forms of error may escape us. Thus pupils whose spelling was so poor at school as to affect their general standing would hardly be found in training-college classes. We should not expect to meet such a case of chronic bad spelling as that reported by Witmer in *The Psychological Clinic*[1], where not only could the boy not write words correctly, but he persistently dropped a stroke in the writing of certain letters, writing "cone" for "come," "hone" for "home," and in transcribing would write "soas-bubble" for "soap-bubble." This trouble was due to the inability of the boy to co-ordinate properly the two eyes, and Witmer's general conclusion may be transcribed here as a warning that bad spelling may have physical as well as psychological causes. "My experience[2]," he says "leads me always to examine the eyesight of a bad speller who is otherwise free from mental or physical defect, and who has enjoyed satisfactory school training, even though such examination appears to be unnecessary and a mere matter of form. I have found in such cases that the chronic bad spelling is invariably associated with some form of defective vision. I am not convinced, however, that the bad spelling is necessarily caused by the eye defect."

THE CORRECTION OF ERRORS.

By STANLEY WYATT, M.Sc.

1. Introduction.

THIS investigation was carried out at the Fielden Demonstration School, Manchester, and originated from consideration of the results of a test which was applied with a view to ascertaining the extent of the improvement produced by a knowledge of the results of previous attempts. In this particular case the test consisted of an attempt to locate the centre of a circle, starting from a point on the circumference, the subject having his eyes closed during the performance. The results suggested that it might be possible to measure the improvability produced by correcting the errors made in connexion with certain subjects of the curriculum, and accordingly Spelling and Arithmetical ability were selected by virtue of their suitability for experimental investigation.

Although few people would venture to assert that the correction of errors is not beneficial to the one who errs, yet many teachers treat the matter with indifference, and it was thought that actual numerical results representing the improvement produced by such a procedure would help to dispel this apathetic attitude, and emphasize the undoubted value of the correction of errors as one of the aids to progress.

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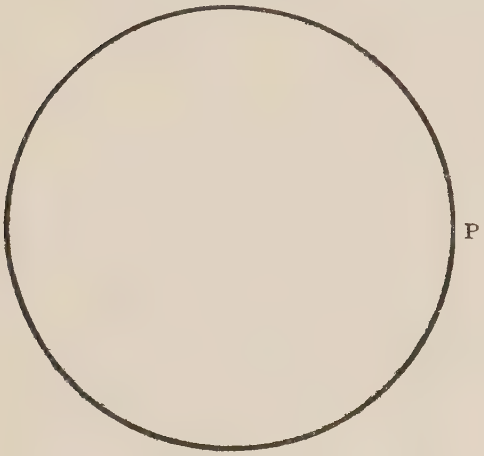
[1] Vol. I, No. 2.

[2] *The Psychological Clinic*, Vol. I , p. 64.

2. Circle Test.

The material for this test consisted of a number of equal circles of one inch radius with centres clearly marked. Each circle was drawn on a separate card. The subject held a pencil on a point P on the circumference of one of these circles; and, with eyes closed, raised the pencil and attempted to place a dot at the centre of the circle. The card was then removed, and the subject allowed to open his eyes. This process was repeated until *ten* such attempts had been made, the results in each case being withheld from the subject.



A second series was now given, but this time the subject was allowed to see the result of each attempt, and then proceeded to make a second attempt on the same card. In every case the extent of the error was measured by the distance of the dot from the centre of the circle.

The following are typical results:—

SUBJECT A (boy age 11).				SUBJECT B (boy age 13).			
Order of Attempts.	1ST SERIES.	2ND SERIES.		Order of Attempts.	1ST SERIES.	2ND SERIES.	
		1st Attempt.	2nd Attempt.			1st Attempt.	2nd Attempt.
1	·42 cms.	·65 cms.	·31 cms.	1	·42 cms.	·67 cms.	·54 cms.
2	·78 ,,	·59 ,,	·45 ,,	2	·54 ,,	·85 ,,	·40 ,,
3	·41 ,,	·55 ,,	·38 ,,	3	·71 ,,	·45 ,,	·17 ,,
4	·58 ,,	·31 ,,	·19 ,,	4	·53 ,,	·44 ,,	·12 ,,
5	·65 ,,	·29 ,,	·22 ,,	5	·58 ,,	·33 ,,	·33 ,,
6	·81 ,,	·60 ,,	·39 ,,	6	·77 ,,	·40 ,,	·31 ,,
7	·39 ,,	·54 ,,	·35 ,,	7	·55 ,,	·33 ,,	·07 ,,
8	·65 ,,	·65 ,,	·59 ,,	8	·70 ,,	·09 ,,	·13 ,,
9	·50 ,,	·30 ,,	·35 ,,	9	·60 ,,	·27 ,,	·18 ,,
10	·65 ,,	·53 ,,	·21 ,,	10	·66 ,,	·14 ,,	·03 ,,
Mean	·58 cms.	·50 cms.	·34 cms.	Mean	·60 cms.	·39 cms.	·23 cms.
A.D.	·12 ,,	·12 ,,	·09 ,,	A.D.	·08 ,,	·16 ,,	·13 ,,

The results show that there is a very marked improvement in the accuracy of the second attempt, whereas there is no noticeable improvement during the period that the subject is kept in ignorance of the results.

The average of the first attempts of the second series is usually lower than that of the first series, thus showing that the improvement in accuracy is not limited to the second attempt on each card. Further, the extent of the errors of the first attempts of the second series sometimes show a gradual decrease in order of magnitude (see results of subject B), a fact which tends to show that an accumulation of improvability occurs. The improvability varies much from individual to individual; it might be interesting to determine the correlation between the extent of improvement and general intelligence.

3. Spelling Ability.

This test was given to a class of eighteen children of both sexes, varying in age from 10 to 12 years. Two lists, A and B, each containing fifty words, constituted the material for the experiment. Each word was clearly enunciated by the experimenter, and the children attempted to write the correct form on papers with which they were provided. The papers were then collected, and nothing further was said regarding the experiment. Three days later the corrected papers of list B only were returned to the children, the misspelt words having been crossed through, and the correct forms written above. The children were required to write out each of the corrected words three times. One week after the first application of the test, the spelling ability of the children was again tested by means of the same lists of words. In the case of list A the children had been kept in ignorance of the results, but the errors made in list B had been corrected. Thus the amount of improvement due to the correction of these errors could be easily ascertained. The following table gives the results in terms of the average number correct per person.

	LIST A		LIST B.	
	1st Test.	2nd Test.	1st Test.	2nd Test.
Mean … …	17·0	17·3	16·8	20·3
A.D. … …	7·3	7·6	7·5	8·2
Percentage Improvement	1·8		20·8	

Thus spelling ability may be accelerated by insisting upon the correction of errors in the manner described. Unless the mistake is corrected the word is liable to be spelt wrongly when the situation again occurs. As an extension of this test an attempt was made to determine the relative value of different methods employed in the correcting of spelling errors. In addition to the methods just described, two other lists of words were given. In the one case the misspelt words were underlined and the children wrote out the correct forms three times each, after they had been correctly spelt orally by the experimenter. In the other case the words were selected from a poem in the class poetry book, and in the interval between the two applications of the test the children read the poem as part of a literature lesson. This method was introduced in order to find the effect of bringing all the words of the list within the perceptual experiences of the children. The children were not aware of the fact that the words of the list were also contained in the poem. The percentage improvement for each of the methods was :—

1. Incorrect form obliterated; correct form written above and then written out 3 times by the subject = 20·8 %
2. Incorrect form underlined and then correctly written 3 times by the subject ... ... = 16·5 %
3. Words selected from a poem and the poem read by the children; lists not returned ... ... = 8·3 %
4. Words not corrected by children; lists not returned = 1·8 %

The difference between the first and second methods is interesting; in the first case the correct form of the word was emphasized; but in the second case the incorrect form remained exposed to view and was also intensified by underlining. A definite improvement is also produced when the perception of the words is intensified by enclosing them within a relatively narrow field of experience, as in the poem. However, of the methods tested, the greatest improvement is produced by completely obliterating the misspelt word, by writing the correct form above it, and then allowing the subject to copy each corrected word three times.

4. Arithmetical Ability.

In order to test the arithmetical ability of the children, four problems, based on the common rules of Addition, Subtraction, Multiplication, and Division, were given, but owing to the difficulty of scoring such performances, this method was discarded in favour of the more indirect process of supplying missing digits to arithmetical examples. The following example in multiplication[1] illustrates the method adopted :—

$$\begin{array}{r} \text{x}786 \times 2\text{x}4 \\ \hline 557\text{x}00 \\ 8\text{x}580 \\ 111\text{x}4 \\ \hline 6\text{x}1\text{x}24 \\ \hline\hline \end{array}$$

Each omission is denoted by a small cross (x), and the problem is to fill in the missing digits. The examples given consisted of a Division, a Multiplication, a Simple Practice, and a modified form of a Bill. The papers on which these examples were printed were given out face downwards, and at a given signal the children turned them over and began to supply the omissions. Thirty minutes later a second signal was given for the children to stop, and the papers were then collected. The same test was repeated under similar conditions after an interval of three days. On the fourth day the experimenter worked through the examples on the blackboard, and on the seventh day a similar test was again given in which the digits varied but the type of example remained the same. We are thus in possession of three series of results. Any improvement between the first and second series may be due in part to practice and to what might be termed the general development of the child, if such a factor be operative in producing any marked difference in the short period of three days. On the other hand, any improvement between the second and third series will be due almost entirely to the process of correcting errors.

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[1] This is the usual method of multiplication employed at the Fielden School, the figure of highest place value being used as the first multiplier.

It should be stated that the children were familiar with the usual methods of solving such examples, but had not been practised in the same for two months previous to the test. Further, in the interval between the application of the tests, the usual lessons in arithmetic consisted of processes connected with the study of fractions. Thus any definite improvement between the first and last applications of the test could not be due to the usual arithmetical practice in the meantime.

System of Marking and Results.

1 mark was given for each digit correctly inserted, and 1 mark was deducted for each incorrect insertion. The values represent the average number of marks obtained per person.

	TEST I.		TEST II.
	1st Application.	2nd Application.	
Mean	9·6	10·0	17·0
A.D.	9·4	10·2	12·6
Percentage Improvement	—	4·2	70·0

The rank correlation between the first and second application of the same test is ·79 ± ·06; a result which emphasizes the reliability of the measurements. The increase of 4·2 per cent. on the first application is insignificant compared with the increase of 70·0 per cent. produced by the correction of mistakes. Thus the evidence is decidedly in favour of the correction of arithmetical errors.

5. General Conclusions and Applications.

It is evident that in the performances tested a marked improvement is produced by the correction of mistakes; and it is reasonable to assume that similar results would be obtained if other subjects of the curriculum were experimentally investigated in like manner. Ignorance of erroneous results is a barrier to progress; moreover, the effect may even be retrogressive. Whenever an error is repeated it is another step in the formation of an incorrect habit; a troublesome increment which will have to be encountered when an effort is made to break up the habit. It is not very difficult to repress an incorrect process which is in its infancy, but when it becomes hardened into a habit its elimination is a formidable task. Consequently errors should be corrected on every available opportunity, and the correct performance be made as intense as possible.

This principle finds immediate application in the correction of homework. Merely to assign marks to the work is not sufficient; the erroneous parts should be corrected and the correct form made intensely prominent.

Similarly, examination papers should be returned to students and the necessary points discussed, otherwise the errors are liable to be repeated.

WHAT CHILDREN LIKE TO DRAW.

By P. B. BALLARD, M.A.

An article of mine on the drawing preferences of London children appeared in Vol. 1, No. 3, of this journal. To the readers of that article the question will inevitably occur: How far are these preferences characteristic of London children, and how far are they common to all children—or, at least, all children of British birth—irrespective of place and circumstance? A little light upon this question the courtesy of the Glamorgan Education Committee has enabled me to obtain. For they permitted me to pursue an inquiry in certain schools under their jurisdiction—schools scattered among the villages and small towns of the country. A large proportion of the parents are colliers; a few are farmers; the most urban of them live within a stone's-throw of meadow, field, or copse. Many, if not most, of the children speak Welsh at home, they go to chapel rather than church, and their childish traditions are more Celtic than Saxon. Indeed, unless one went to the remoter parts of Wales or the wilds of Scotland it would be difficult to find within the borders of our island a class of children differing more widely from the children of the metropolis in the matter of physical and social environment. In that respect therefore they suited my purpose well.

The new inquiry was not quite on a line with the old. In the London inquiry I examined and classified the drawings myself; in the Glamorgan inquiry the head teachers of the schools, acting on detailed instructions, set the tests, classified the papers, and sent the results to me. My own part in the investigation was merely to lay down the mode of procedure and to collate the results. The following notes, which were sent for the guidance of the head teachers, are here given for the benefit of those who may wish to repeat the tests:—

Human Beings: Dolls are included.

Vehicles: The term comprises everything concerned with locomotion and includes aeroplanes and balloons.

Ships: All boats, small and large, come under this head.

Houses: Buildings of all sorts; churches, huts, wigwams, lighthouses; part of a house, such as a complete room; monuments.

Weapons and Instruments: Things used in war or sport, such as guns, swords, bats, balls, arrows, &c.

Landscapes: No drawings should be considered landscapes unless they contain at least three of the four elements—foreground, middle distance, distance, and sky.

Miscellaneous objects: All small objects not included under the other headings.

As each child was asked to limit his drawing to one object and could label the object if the teacher failed to identify it, the difficulties of classification were small, and little room was left for variety of judgment. Altogether the records of nearly 10,000 drawings were sent me.

I do not propose to give a detailed analysis of the results, but merely to indicate to what extent they confirm or contradict my previous findings. Athough there are a few arresting points of difference, the results are on the whole strikingly similar to those obtained in London. The various curves rise and fall with almost perfect parallelism. There is in fact between these two classes of children far greater diversity in the degree of preference at a given age for a given object than there is in the waxing and waning of interest in that object with the passing of years. Take as a case in point the interest in mankind. London children, both boys and girls, draw human beings much more frequently than Glamorgan children. For every two that the latter draw the former draw three. Yet are the following broad statements true of both. Nine is the turning age, the age of minimum frequency of drawings of human beings. Before that age the drawings are more numerous than after. Before nine the girls' drawings outnumber the boys'; after nine the boys' drawings outnumber the girls'. After the age of twelve there is a slight drop, except in the case of the Glamorgan girls.

The following table will enable the reader readily to compare the general orders of preference :—

	London Boys.	*Glamorgan Boys.*	*London Girls.*	*Glamorgan Girls.*
1.	Ships	Ships	Plant Life	Plant Life
2.	Miscel. Objects	Miscel. Objects	Houses	Houses
3.	Plant Life	Houses	Miscel. Objects	Ships
4.	Houses	Animals	Human Beings	Miscel. Objects
5.	Human Beings	Plant Life	Animals	Animals
6.	Vehicles	Human Beings	Ships	Human Beings
7.	Animals	Weapons	Vehicles	Landscapes
8.	Weapons	Vehicles	Weapons	Weapons
9.	Landscapes	Landscapes	Landscapes	Vehicles

The fondness for ships which was so marked a characteristic of the London child is more pronounced still in the Glamorgan child. It is one-third greater on the part of the boys and twice as great on the part of the girls. This peculiar preference rises to enormous proportions at seaside places. At Oystermouth on Swansea Bay nearly a third of the girls drew ships, and more than half the boys.

Although some form of plant life is the first favourite with all the girls it does not out-distance the others to the same extent in the country as in the town. For every three plants that were drawn in Glamorgan four were drawn in London. This was somewhat different from what was anticipated, and serves to emphasize the fact that the environment may influence the child's choice in two ways, diametrically opposed. The first is the positive way of supplying his memory with familiar forms ; the other is the negative way of contra-suggestion. The absent and the less familiar makes a stronger appeal to his imagination and clamours more insistently for pictorial expression. It is the sort of motive that moves him to draw at school his father, and at home his teacher. We see it in the more marked liking for houses among country children. This may, however, arise from the fact that London children see buildings at such short range and in such conglomeration that rarely do they see a house steadily and see it whole.

The positive influence of the environment is manifest in several instances. More animals than human beings are drawn by country children, more human beings than animals by town children. Town children frequently represent vehicles; country children rarely. Landscapes were more frequently drawn in Glamorgan than in London.

In spite of these differences the following generalizations are strictly true of both classes of children :—

1. A boy's favourite object for drawing is a ship; a girl's is some form of plant life, preferably a flower.
2. Interest in drawing ships maintains an extraordinarily high level among boys from five years of age to eleven.
3. Girls like drawing plants about three times as much as boys do.
4. Next to plants, girls prefer houses.
5. Nine is the age of minimum interest in drawing human beings.
6. The fondness for drawing human beings is greater before nine than after nine.
7. Girls draw human beings more frequently than boys before nine years of age ; less frequently after.
8. There is after twelve years of age a second falling off in the frequency with which human beings are chosen for drawing.
9. Eight years of age seems to be the period of maximum interest in drawing both houses and animals.
10. Fondness for sketching vehicles is greatest at six years of age.
11. Children do not often attempt landscapes, but the frequency gradually increases with age.

ROUSSEAU AND ARNOBIUS: COMPARISONS AND CONTRASTS.

By E. T. CAMPAGNAC,
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WHERE argument is difficult or impossible, men have been wont to seek the aid of an image of their own fashioning. "Let us suppose," they say; and assuming our readiness to "suppose," they set before us, in circumstances nicely arranged to meet their needs, a figure which they maintain will show itself of such or such a quality and act in this way or in that. If their appeal is something less than argument, we are yet not bound to urge that it is illegitimate. It is a device to which writers have been specially apt to resort in attempts to picture the origin of human society, or—a theme even more difficult—the condition of man before society existed or in isolation from society.

An instance, familiar no doubt to theologians, but, so far as I know, not yet noted by students of educational theory, is provided by Arnobius, writing—it may be safely assumed from internal evidence—in the year 303 A.D. The passage to which I refer (*Contra Gentes*, II: 20—25), valuable as it is for many other reasons, gets an added interest from the comparisons and the contrasts which it suggests with Rousseau's *Emile*.

Rousseau, with paradox sometimes brilliant and sometimes boyish in its effrontery, and with a perversity sometimes amiable and often hysterical, half persuades himself, or wholly convinces his less critical readers, that he is bent on destroying every kind of human organization; but he is no foe to society (though the implacable foe of a corrupt and degenerate society which ill deserves the name), and in his attempt to draw a sketch of the ideal man, is in truth giving colour and life to a picture of an ideal community.

Arnobius makes no pretence of a desire to escape from society or of denying its necessity for human life; but he would establish and fortify a Christian society, not on the ruins, but in the stead of Roman civilization. We need not stay to consider how much more revolutionary a doctrine and how much more extravagant a programme we have here than in Rousseau. Destruction (to take Rousseau literally—and to do him injustice) may be foolish and wicked, but it is not an enterprise which demands the stoppage of logic for its beginning—whereas to build without foundation does! The *Varro of the Latin Church*, Arnobius owed a debt which ordinarily and naturally he was fain to acknowledge to Roman culture; but often with the vehemence of a convert he attacks his former friends and does outrage to his ancient alliance. Of course, his shafts are, if not envenomed, yet sharpened and keenly sped by his sense of revulsion and disgust against some of the manifestations, known to him in Northern Africa, of another "Pagan" society, perhaps the foulest of which record remains. It may be urged against Rousseau that his ideal was vaguely if largely conceived, and the charge cannot be wholly gainsaid; but it is fair to claim, that while it drew a borrowed charm and potency from the splendour of his style and from his fervour, the great manner and the passionate conviction in their turn owe something both to the magnitude and to the solidity of his ideal. Arnobius knew much better what he wanted; but we have to admit that his conception of the Christian ideal, when generous, was loosely formed, and was meagre and mercantile when it was definite. He has little poetic imagination; and when he asks us to "suppose" a human being brought up in isolation from human society, he makes an hypothesis in the manner of a mathematician asking us to accept for a moment something which he will presently show to be "absurd"; he cannot offer us a moving fiction sustained and animated by an idea. But let us come as quickly as we may to the text; my wish is rather to draw attention to that than to attempt any elaborate commentary.

In a singularly unattractive section Arnobius urges the prudence of accepting Christianity on the ground that, if it is false, the believer or convert will, at the end of his life, find himself in no worse case than the unbeliever; whereas, if it is true, the unbeliever will discover that he has incurred endless penalties. He then turns to meet an objection.

Ignorant and foolish people, it is said, have accepted Christianity. Arnobius is ready to agree; but, in reply, declares that to the questions which press most insistently for answer, questions upon the origin and destiny of man, the learned have found no satisfactory answer.

Turning next to meet another attack, he says that if faith is an act of the spirit, or an attitude of mind which is improper because unreasonable, it does not lie with the adherents of the philosophers to press this, since the philosophers themselves have sought and won credence or faith from their followers. And more than this, many of the teachings of the philosophers are the same as those of Christians. The unity of the Godhead, the resurrection of the dead, punishment to be received after death—all these are doctrines of some "philosophers." Here he turns to discuss the origin and nature of the soul, and says that it is not of divine origin and not of an immortal nature. For if it were immortal and divine, it would have brought with it and kept, unspoilt and undimmed by the conditions of human existence, that very knowledge the want of which provokes man's restless and unsatisfied enquiries. Like the beasts in other respects, man may not claim superiority to them on the score of his intelligence or reason—for, not to stress unfairly the consideration that not all men act rationally, the development of reason in man is due to his poverty and weakness—to necessity, not to nature, he owes it. And the arts, on which he so much prides himself—grammar, music, rhetoric—these are all instruments with which necessity has taught him to equip himself, arms which necessity has made him grasp, and practice has given him such skill as he has in their use.

But Arnobius shall speak for himself—aided by a translation[1] from Volume XIX (pages 86 seq.) of the *Ante Nicene Library* :—

20. And, that we may show you more clearly and distinctly what is the worth of man, whom you believe to be very like the higher power, conceive this idea; and because it can be done if we come into direct contact with it, let us conceive it just as if we came into contact. Let us, then, imagine a place dug out in the earth, fit for dwelling in, formed into a chamber, enclosed by a roof and walls, not cold in winter, nor too warm in summer, but so regulated and equable that we suffer neither cold nor the violent heat of summer. To this let there not come any sound or cry whatever, of bird, of beast, of storm, of man—of any noise, in fine, or of the thunder's terrible crash. Let us next devise a way in which it may be lighted, not by the introduction of fire, nor by the sight of the sun, but let there be some counterfeit to imitate sunlight, darkness being interposed. Let there not be one door nor a direct entrance, [but] let it be approached by tortuous windings, and let it never be thrown open unless when it is absolutely necessary.

21. Now, as we have prepared a place for our idea, let us next receive some one born to dwell there, where there is nothing but an empty void—one of the race of Plato, namely, or Pythagoras, or some one of those who are regarded as of superhuman wit, or have been declared most wise by the oracles of the gods. And when this has been done, he must then be nourished and brought up on suitable food. Let us therefore provide a nurse also, who shall come to him always naked, ever silent, uttering not a word, and shall not open her mouth and lips to speak at all, but after suckling him, and doing what else is necessary, shall leave him fast asleep, and remain day and night before the closed doors; for it is usually necessary that the nurse's care should be near at hand, and that [she] should watch his varying motions. But when the child begins to need to be supported by more substantial food, let it be borne in by the same nurse, still undressed, and maintaining the same unbroken silence. Let the food, too, which is carried in be always precisely the same, with no difference in the material, and without being re-cooked by means of different flavours; but let it be either pottage of millet or bread of spelt, or, in imitation of the ancients, chestnuts roasted in the hot ashes, or berries plucked from forest trees. Let him, moreover, never learn to drink wine, and let nothing else be used to quench his thirst than pure cold water from the spring, and [that] if possible raised to his lips in the hollow of his hands. For habit, growing into

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[1] The Latin should, however, be consulted.

[second] nature, will become familiar from custom; nor will his desire extend further, not knowing that there is [anything] more to be sought after.

22. To what, then, [you ask] do these things tend? [We have brought them forward] in order that, as it has been believed that the souls [of men] are divine, and therefore immortal, and that they come to their human bodies with all knowledge, we may make trial from this [child], whom we have supposed to be brought up in this way, whether this is credible or has been rashly believed and taken for granted, in consequence of deceitful anticipation. Let us suppose, then, that he grows up, reared in a secluded, lonely spot, spending as many years as you choose, twenty or thirty—nay, let him be brought into the assemblies of men when he has lived through forty years; and if it is true that he is a part of the divine essence, and lives here sprung from the fountains of life, before he makes acquaintance with anything, or is made familiar with human speech, let him be questioned and answer who he is, or from what father; in what regions he was born, how or in what way brought up; with what work or business he has been engaged during the former part of his life. Will he not, then, stand [speechless], with less wit and sense than any beast, block, stone? Will he not, when brought into contact with strange and previously unknown things, be, above all, ignorant of himself? If you ask, will he be able to say what the sun is, the earth, seas, stars, clouds, mist, showers, thunder, snow, hail? Will he be able to know what trees are, herbs, or grasses, a bull, a horse, or ram, a camel, elephant, or kite?

23. If you give a grape to him when hungry, a mustcake, an onion, a thistle, a cucumber, a fig, will he know that his hunger can be appeased by all these, or of what kind each should be [to be fit] for eating? If you made a very great fire, or surrounded him with venomous creatures, will he not go through the midst of flames, vipers, tarantulæ, without knowing that they are dangerous, and ignorant even of fear? But again, if you set before him garments and furniture, both for city and country life, will he indeed be able to distinguish for what each is fitted, to discharge what service they are adapted? Will he declare for what purposes of dress the stragula was made, the coif, zone, fillet, cushion, handkerchief, cloak, veil, napkin, furs, shoe, sandal, boot? What if you go on to ask what a wheel is, or a sledge, a winnowing-fan, jar, tub, an oil-mill, phoughshare, or sieve, a mill-stone, plough-tail, or light hoe; a curved seat, a needle, a strigil, a laver, an open seat, a ladle, a platter, a candlestick, a goblet, a broom, a cup, a bag; a lyre, pipe, silver, brass, gold, a book, a rod,

a roll, and the rest of the equipment by which the life of man is surrounded and maintained? Will he not in such circumstances, as we said, like an ox or an ass, a pig or any beast more senseless, look at these indeed, observing their various shapes, but not knowing what they all are, and ignorant of the purpose for which they are kept? If he were in any way compelled to utter a sound, would he not with gaping mouth shout something indistinctly, as the dumb usually do?

24. Why, O Plato, do you in the *Meno* put to a young slave certain questions relating to the doctrines of number, and strive to prove by his answers that what we learn we do not learn, but that we [merely] call back to memory those things which we knew in former times? Now, if he answers you correctly (for it would not be becoming that we should refuse credit to what you say) he is led [to do so] not by his real knowledge, but by his intelligence, and it results from his having some acquaintance with numbers, through using them every day, that when questioned he follows [your meaning], and that the very process of multiplication always prompts him. But if you are really assured that the souls [of men are] immortal and endowed with knowledge [when they] fly hither, cease to question that youth whom you see to be ignorant and accustomed to the ways of men; call to you that man of forty years, and ask of him, not anything out of the way or obscure about triangles, about squares, [not] what a cube is, or a second power, the ratio of nine to eight, or, finally, of four to three; but ask him that with which all are acquainted—what twice two are, or twice three. We wish to see, we wish to know, what answer he gives when questioned—whether he solves the desired problem. In such a case will he perceive, although his ears are open, whether you are saying anything, or asking anything, or requiring some answer from him; and will he not stand like a stock, or the Marpesian rock, as the saying is, dumb and speechless, not understanding or knowing this—whether you are talking with him or with another, conversing with another or with him; whether that is intelligible speech which you utter, or [merely] a cry having no meaning, but drawn out and protracted to no purpose?

25. What say you, O men, who assign to yourselves too much of an excellence not your own? Is this the learned soul which you describe, immortal, perfect, divine, holding the fourth place under GOD, the LORD of the universe, and under the kindred spirits, and proceeding from the fountains of life? This is what precious [being] man, endowed with the loftiest powers of reason, who is said [to be] a microcosm, and [to be]

> made and formed after the fashion of the whole [universe], superior, as has been seen, to no brute, more senseless than stock [or] stone; for he is unacquainted with men, . . . But when he goes to school [you say], and is instructed by the teaching of masters, he is made wise, learned, and lays aside the ignorance which till now clung to him. And an ass, and an ox as well, if compelled by constant practice, learns to plough and grind; a horse, to submit to the yoke, and obey the reins in running; a camel, to kneel down when being loaded or unloaded; a dove, when set free, to fly back to its master's house; a dog, on finding game, to check and repress its barking; a parrot, too, to articulate words; and a crow to utter names.

Arnobius deserves a more general study than he has received. His Latin, often obscure and difficult, is vigorous, and rises at times to sincere and passionate eloquence; his learning is great but easily carried. His relationships with Christianity which he adopted, with Roman and Græco-Roman culture in which he was nurtured, and which he could not, if he wished, cast off; with the Phœnician setting in which he was placed and the Phœnician influence by which he was surrounded—these are some of the topics with which criticism must engage more closely.

For my present purpose I note three points very briefly:

(1) Like Rousseau, Arnobius is carried further by his own vehemence than he needs to go. The attack which he makes upon Plato, whom he calls later (II, 36) the "the divine Plato," not unskilfully and yet unhappily is one by which not Plato only is reached.[1]

(2) The solitary of Arnobius' imagination lives his dull life upon a level much lower than that of the beasts. Emile, lonely and blameless and fit to learn from Nature the lessons which a debased and artificial Society could not teach him, more easily wins sympathy.

(3) The Arts—Grammar, Rhetoric, Music (for these are here named by Arnobius)—are to be learnt, if learnt at all, under pressure of necessity. Rousseau, but with kindlier suggestion, refuses to hasten the stages of Emile's education, letting accomplishment and skill find their source and their impulse in need. But with him necessity has a nobler significance. Its service to man is not the gift of arms with which to fight an alien nature without, but the discovery of his own appetites, corresponding with his power, and his reconciliation with the world as he finds himself.

[1] This is remarked in the preface, quoted by Orelli (Leipzic, 1816), to the edition (Leyden, 1651) which has been conjecturally attributed to Salmasius. The editor, whoever he was, writes of the passage in question, "Libro quidem secundo auctor noster Gnosticorum sequitur opinionem de immortalitate animarum, et aliis in locis de veritate Christiana nonnihil recedit. Sed hoc condonandum ei, qui ex ethnicismi tenebris recens ad veritatem Christianam pervenerat. Idem huic auctori evenit, quod iis solet, qui e carcere tenebricoso in lucem perducti visum adbuc dubium habent. In ceteris subtilis, disertus, ingenio et fœcundia pollens, Ethni cismi debellator fortissimus."

SCHOOL GEOGRAPHY—A CONTRIBUTION TO THE HISTORY OF METHOD. I.

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CONSIDERING the attention that has been given to School Geography of recent years, the amount of definite information we have of the history of Elementary Geography teaching in this country is very small. Professor Foster Watson's chapter, "The Teaching of Geography in England up to 1660,"[1] has given us a useful résumé of educated opinion in the 16th and 17th centuries, emphasizing the claims of Geography to a place in the curriculum: it also gives a representative list of English Geography books of the time. But, so far, very little has been written about methods of teaching or the conceptions of School Geography that have been in vogue at different periods. Little is to be learnt from the usual writers on children's books. Both Hazlitt and Tuer, for example, ignore geographies altogether, and Mrs. Field[2] makes only three references to them, none of which are indexed. In Johnson's *Old Time Schools and School Books* there is a description of some American productions of the period 1798-1850, but no notice is taken of books of similar character used in England at the same date. The whole question is one of considerable importance, and in what follows it is not proposed to touch more than the fringe of the subject. Indeed the article is based on geographies and other materials immediately to hand, without going far afield; but the material, such as it is, is sufficiently representative to justify a preliminary survey.

Though Geography was "optional" in English Primary Schools until 1900,[3] and still receives scant attention in many Public Schools,[4] it has nevertheless an interesting history. Some Geography has doubtless been taught in all ages in connexion with Literature, History, Mathematics, or Science. Thus the Greek schoolboy as he memorized the Catalogue of the Ships and Tribes that took part in the Trojan War was learning some excellent geographical facts about his own country.

"Th' inhabitants of Hyria, and stony Aulida,
Schæne, Scole, the hilly Eteon, the holy Thespia,
Of Græa, and great Mycalesse, that hath the ample plain,
Of Harma, and Ilesius, and all that did remain
In Eryth, and in Eleon, in Hylen, Peteona,
In fair Ocalea, and, the town well-builded, Medeona,
Copas, Eutresis, Thisbe that for pigeons doth surpass,
Of Coroneia, Haliart, that hath such store of grass,
All those that in Platea dwelt, that Glissa did possess,
And Hypothebs, whose well-built walls are rare and fellowless,

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[1] *Beginnings of the Teaching of Modern Subjects in England.* 1909. Chap. III.
[2] *The Child and His Book.* [3] Code, 1900.
[4] cf. *Public Schools from Within.* 1906. p. 284.

In rich Onchestus' famous wood, to watery Neptune vowed,
And Arne, where the vine-trees are with vigorous bunches bowed,
With them that dwelt in Midea, and Nissa most divine,
All those who utmost Anthedon did wealthily confine."[1]

Indeed, through Homer a somewhat inaccurate knowledge might be gained of the whole habitable world as then understood, but what the Geography acquired in this way was worth we can only surmise. At any rate, we should not expect an English schoolboy to have a very clear idea of the topography of his own country after memorizing, say Canto xi, Book IV, of Spenser's *The Faerie Queen.* And few people who know their Bible well have more than a very hazy notion of the geographical conditions of the Eastern Mediterranean.

The geographical knowledge of the Mediæval schoolboy in England seems to have been hardly more, if indeed as far, advanced as that of his Greek predecessor, for the time had not yet arrived when the geographical aspects of the Latin texts were emphasized, save perhaps in a few schools of higher education, such as that of Gerbert, at Rheims, towards the end of the 10th century. Apart from Gerbert's reputation as a teacher, he is said to have been especially famous for his construction of terrestrial and celestial globes, which by means of agents in the chief cities of Europe he exchanged for copies of Classical Latin texts, and which he was accustomed to use to illustrate his lectures.[2]

Perhaps we may take William of Wykeham's instructions in the Statutes of New College, Oxford, 1379, allowing scholars to sit round the fire in hall after dinner on feast days, listening to poems, chronicles, and "the wonders of the world,"[3] as a sign of the growing interest in the earth, abundant evidence of which is seen alike in the enormous popularity of the fabulous travels of Sir John de Maundeville (c. 1360), and in the growth of geographical consciousness which led many educational writers of the 16th and 17th centuries to press the claims of Geography to a place in the curriculum. The 14th century, in fact, witnessed a great development of geographical knowledge and interest through the writings of great travellers like the Polos, through missionary enterprise, and through commerce. Cartography, too, seen at its best in the portulani of the Catalan Atlas, 1373, had made a great advance, and careful surveys were taking the place of speculation. New sources of knowledge were being continually opened up. The appearance of a Latin translation of Ptolemy's Geography in 1410 gave direct access for the first time for centuries to the geographical knowledge of the ancients. A considerable development of geographical apparatus was taking place, and terrestrial globes became common; some, like the

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[1] Chapman: *Homer's Iliad.* Bk. II. cf. the detailed topographical account of the Holy Land given in Joshua.

[2] *A Short History of Mathematics.* Ball. p. 137. (This is especially interesting in view of the fact that terrestrial globes are said to have been unknown during the Middle Ages (cf. Encyclopædia Britannica—Art Maps) a statement that on a priori grounds seems somewhat improbable, seeing that the globular theory of the earth as elaborated by the Greeks was accepted throughout this period by a section of philosophers. cf. *The Dawn of Modern Geography.* Vol. I. Beazley. It is the view of the earth set out in Capella's Encyclopædia "Nuptials of Philology and Mercury," one of the recognized authorities of the Middle Ages, in the Chapter on Geometry).

[2] *Life in the Mediæval University.* Rait. p. 60.

Nuremberg Globe of Martin Behaims, 1492, were made of vellum or pasteboard; others, like the Laon Globe, were of copper. Explorers like Columbus and Magellan now carried terrestrial globes with them on their voyages. In 1501 we hear of them being used in the University of Vienna, and already in 1531 Sir Thomas Elyot in the *Governour* tells us that very good and simple treatises on the globes were in existence; and it would appear that the use of the globes was recognized as a suitable study for schoolboys.

With the beginning of the 16th century the period of modern Geography definitely begins. Speculation and tradition were to give way to carefully investigated fact. The momentous discoveries of the New World and of the routes round South Africa and South America fired the imagination of men, and henceforth Geography was a subject for schoolmasters to reckon with either on grounds of expediency, or because of its intrinsic interest, its value as an introduction to history, and so on. But though Geography received recognition from writers like Erasmus, 1511; Elyot, 1531; Vives, 1523; and Sir Humphrey Gilbert, 1572, the attitude of English schoolmasters seems to have been somewhat uncertain to begin with. Mulcaster, who was Head Master of Merchant Taylors' School, 1561-1586, makes no mention of Geography as a school subject in his *Positions*, 1561, published 1581. We are also ignorant of Camden's attitude. Camden was Head Master of Westminster School, 1593-1599, and it was during his previous eighteen years tenure as Second Master that he wrote his famous *Britannia*, 1586. Under his successor, Richard Ireland, however, Geography was taught, for a contemporary document, c. 1620, tells us that "After supper (in summer time) they (i.e., the 6th and 7th forms) were three or four times in a week called to the Mr's chamber (especially they of the 7th form) and there instructed out of Hunter's Cosmographia, and practised to describe and find out cities and countries in the maps."[1]

But even by 1675 Geography does not seem to have been commonly regarded as a school subject in the ordinary sense of the term, for in the list of school books included in Robert Clavel's *General Catalogue of Books printed in England*, 1666-1674, Lond. 1675, the only manual that in any way bears on Geography is P. Gallius' *De topographia Constaninopoleos*, 2s. There is evidence, however, that by this date Geography was a fairly popular subject. A cursory survey of the catalogue reveals some 70 volumes concerned with Geography, a number that compares favourably with the list of mathematical publications. The books are of all sizes, from folio to small 12 mo.; the majority are classed as histories, being in fact combined histories and geographies, or books of travel, together with a few cosmographies and descriptive geographies: the rest are concerned with surveying, the globes, and physical geography. A striking feature of the list is the large proportion of inexpensive books it contains, of which the following are typical examples:—

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[1] *The Public Schools.* By W. L. C. p. 93. (Comenius, it will be remembered, wrote *The School of Infancy* and the *Great Didactic* in which Geography finds a place in the curriculum of the infant and primary schools as well as in the secondary school, between 1628-32, the former book appearing in 1633, the latter in 1657).

> *Fage's Cosmography*, or a description of the whole world; represented by a more exact and certain discovery in the excellencies of its Scituation, Commodities, and Inhabitants; and the History of their particular and distinct Governments, Religions, Arms, and Degrees of Honour used among them. 2s., large 8vo.
> *Meriton's Geographical Description of the World*, with a brief Account of the several Empires, Dominions, and parts thereof; as also the natures of the People, the Customs, Manners, the Commodities of the several Countries: with a description of the principal Cities in each Dominion; together with a short direction for Travellers. 2s. 6d., large 12mo.
>
> *Moron's Tutor to Astronomy and Geography*, or an easie and speedy way to know the use of the Globes, Celestial and Terrestrial, in six books. 6s., 4to.
>
> *R. T.'s Brief Treatise of the Use of the Globes Celestial and Terrestrial*, wherein is set down the principles of the Mathematicks, and the ready way of working all the propositions of the Globe. 6d. 8vo. (first published 1616).
>
> *The Adventures of T. S., an English Merchant*, taken Prisoner by the Turks of Argieres, and carried into the Inland Countries of Africa; with a description of the Kingdom of Argieres, of all the Towns and places of note thereabouts; the chief Commodities . . . 1s., small 8vo.
>
> *A New Voyage into the Northern Countries*, being a Description of the Manners, Customs, Superstitions, Buildings and Habits of the Norwegians, Laponians, Kilops, Borandions, Siberians, Samolledes, Zemblans, and Islanders, with Reflections upon an Error in our Geographers about the Scituation and Extent of Greenland & Nova-Zembla. 1s., large 12mo.

It is interesting to note a Latin edition of Bernard Varenius' *Geographia Generalis*, improved and illustrated by Sir Isaac Newton. Large 8vo., 5s.

As typical of the large books, it will suffice to note Heylyn's *Cosmography*, folio, £1; Ogleby's *Africa*, with maps and illustrations, folio, £2 5s.; Sanson's *Geographical Description of the four parts of the World*, with maps, folio, £1.

The list of Globes published at the same date is also of interest:—

Ptolemean Spheres, 14″ diameter, £3.
Globes, about 10″ diameter, £2 10s.
Small Globes, Celestial and Terrestrial, 8″ diameter, £2.
Ptolomaick Spheres, 8″ & 10″ diameter, £2.
The Mathematical Jewel, Past-board, 17″ diameter, £2.
Globes, about 6″ diameter, £1 10s.

Concave Celestial Hemispheres, which serve for a case to a Terrestrial Globe, fitted to carry in the pocket, 15s.

Pocket Globes, Celestial and Terrestrial, 3″ diameter, £1 5s.

Great Globes, Celestial and Terrestrial, 26″ diameter, £20.

A Capernean Sphere, 20″ diameter, comprehending the general and particular spheres in one, £5.

Middle Sized Globes, Celestial and Terrestrial, between 14″ and 15″, £4.

A new size of Globes, Celestial and Terrestrial, about 15″ diameter, £4.

The description of the last item is worth reproducing: "The first represents the Heavens, with all the Constellations, fixed Stars, Circles, Lines, &c. The other of the Earth, Cities, Towns, Seas, Rivers, Lakes, Coasts, Havens, Capes, Sands, &c.—wherein *Asia* and *America* is all new, and much different from what was ever yet drawn upon a Globe, the Eastern part of *Asia* being rectified more than ten degrees, and many places in *Europe*, *Africa*, and *America* more than 5 degrees, &c."[1]

An interesting example of a popular English Geography of the early 16th century is Andrew Borde's *The First Boke of the Introduction of Knowledge*, 1542[2], dedicated to the Lady Mary, daughter of Henry VIII. It is really an Itinerary or Book of Travel, and gives a descriptive account, partly in verse and partly in prose, of the various countries of Europe and the lands around the Mediterranean—Barbary, Egypt, and Palestine: It "dothe teache a man to speake parte of all maner of languages,[3] and to know the usage and fashion of all maner of countreys. And for to know the moste parte of all maner of coynes of money the whych is currant in euery region." The book is enlivened with crude woodcuts depicting the idiosyncrasies of each nation, though the same cut often serves for men of different countries. Thus, a man with a cloak very jauntily thrown over his shoulder does duty for Saxony, Spain, Bion, and Egypt.

The first chapter, which "treateth of the naturall dysposicion of an Englyshman, and of the noble realme of England, & of the money that there is vsed," is illustrated by a drawing of an unclothed Englishman with a bluff King Hal sort of look about him, holding an immense pair of scissors and describing himself in rhyme:—

"I am an English man, and naked I stand here,
Musyng in my mynde what rayment I shall were;
For now I wyll were thys, and now I wyl were that;
Now I wyl were I cannot tel what.
All new fashyons be pleasant to me;
I wyl have them, whether I thryue or thee.

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[1] See also the list of Geographies, Atlases, &c., in the *Term Catalogues*, 1668-1709. E. Arber. 3 vols., London, 1903.

[2] Reprinted by the Early English Text Society. Extra Series. No. X. 1870.

[3] cf. "*Instructions for Forraine Travell*, shewing by what cours, and in what compasse of time one may take an exact Survey of the Kingdom and States of Christendome and arrive to the practical knowledge of the languages to good purpose." James Howell. 12mo., 1642.

I do feare no man; all men feryth me;
I ouercome my aduersaries by land and by see;
I have no peere, yf to my selfe I were trew;
Bycause I am not so, dyuers times I do rew.
Yet I lake nothyng, I have all thynge at wyll.

. . . .

Yet aboue all thinges, new fashions I loue well,
And to were them, my thryft I wyl sell.
In all this worlde I shall haue but a time;
Holde the cuppe, good felow, here is thyne and myne!"

In prose he proceeds to describe very briefly the natural resources of England, its agricultural, mineral, and industrial wealth, the beauty of its women, its castles and defences, and the noble City of London, adding a list of the chief ports and havens of the country. The book next deals with the variety of "speeches" spoken in these Islands, with the wonders of England—the baths of Bath, Stonehenge, salt wells, &c.—and finally with the coinage.

Chapter II deals with Wales in much the same fashion. The woodcut represents a man harping, and a second kneeling before a picture of the Virgin and Child; the former addresses the reader thus:—

"I am a Welshman and do dwell in Wales,
I haue loued to serche boudgets & looke in males[1];
I loue not to labour, nor to delue nor to dyg;
My fyngers be lymed lyke a lyme twyg;
An whereby ryches I do not greatly set,
Syth all hys fysshe that commeth to the net."

He avows his love for "Our Lady," for "good rosted cheese," and for his harp, and proceeds in prose to deal with the surface of Wales, its waste ground, and mountains, its castles, and its people, together with their virtues and vices. The account ends with a list of Welsh numerals and a short conversation in Welsh and English, calculated to be of use to the traveller:—

Wher is the best In & best lodging?

. . . .

Ple may I cletty gore yne?
Maystres, have you any good meat and lodgyng?
Vey maistres, oes gennowh whe thin or booyd ta a
cletty da? . . . &c.

The idiosyncrasies, real or supposed, of each nationality are treated in like manner. In all cases the amount of real geographical description of an area is very slight.

Borde also wrote an *Itinerary of Europe*, which he refers to in the *Introduction of Knowledge* as having been lost, and an Itinerary of England entitled *The Peregrination of Doctor Boarde*, supposed by some to be part of the lost volume on Europe, which is a list of the

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[1] I like thieving.

" market towns, castles, bishops, adjacent isles, havens, downes, mountaynes, hilles, dayles, playnes and valleyes of England," together with the stone bridges, rivers and pools, forests and parks, and highways of the country.

It is interesting to compare with Borde's *Introduction*, Isaac Taylor's *Scenes in Asia for the Amusement and Instruction of little Tarry-at-Home Travellers.* Small 8vo. London 1819—a Child's Geography or book of travel of the early 19th century. The book is written partly in verse and partly in prose, and is divided into sections, each of which has an appropriate engraving clearly drawn and to be had either plain or hand-coloured. There are some 84 illustrations in all, ostensibly depicting scenery, historical events, manners, customs, &c.; but in spite of their pleasing effect they are full of inaccuracies, especially in matters of dress, and accordingly lose in value for teaching purposes, though they add considerably to the interest of the narrative. Incidentally, it is to be noted that these pictures were intended to provide material for Geography stories with children too young to read for themselves—

" Yet let your young brothers and sisters all see,
Although they can't read, they're so small;
And tell them what every picture may be;
You know, and can tell it them all."

A map is provided, containing few names, but indicating by a number the position of every locality mentioned in the text, and each section begins by fixing the locality of the region on the map—

" Pray, look at the Map now, and find every place,
The journey is marked this to show.
'Twill hinder! but then you're not running a race;
You will understand better, you know."

The method throughout is descriptive, concerned to give a bird's eye view of the surface of each area, with its accompanying human conditions, people, and historical associations, such facts being chosen as are likely to make the area stand for something in the child's mind. In one area it is the peculiarites of the people, in another some historical association, in another the physical conditions of the surface, and so on, that are specially emphasized, and as occasion offers opportunity is taken to point a moral. The reading is interesting, and names are reduced to a minimum. The following extract from the section on Further India will serve as illustration :—

> " Rice always grows in lands overflowed with water, it then rises, and perfects itself with very little cultivation, for which reason many of the inhabitants of Siam choose to live near the banks of rivers, although for half the year the whole country is laid under water by the floods. To prevent the inundation from carrying away their houses, they build them on the tops of high posts. They get at them in summer time by a ladder, and in the wet season are confined to their habitation: or if they want to visit a neighbour, must employ a boat."

Suppose a storm the line should break,
 And drift the boat at distance;
Or wind and tide the posts should shake,
 How could they get assistance?

Or even should a foot but slide,
 There'd be a pretty ducking;
And all this wild of waters wide
 To float, and try one's luck in.

I tell you, then, I will not go,
 I don't love rainy weathers;
Unless I fishes' gills could show,
 Or good goose wings and feathers.

When it is remembered that Borde's *Introduction* was intended for adults in 1542, the advance made by the early 19th century is evident, though, on the other hand, if we compare Taylor's book with Elyot's conception[1] of what the content and method of Elementary Geography teaching ought to be, the advance seems very small indeed.

"To prepare the childe to understandynge of histories . . . . It shall be therefore, and also for refreshing the witte, a conuenient lesson to beholde the olde tables (maps) of Ptholomee, where in all the worlde is paynted, hauynge firste some introduction in to the sphere, whereof nowe of late be made very good treatises, and more playne and easie to lerne than was wonte to be.

"All be it there is none so good lernynge as the demonstration of cosmographie by materiall figures and instrumentes, hauynge a good instructour. And surely this lesson is bothe pleasant and necessary. For what pleasure is it, in one houre, to beholde those realmes, cities, sees, ryuers, and mountaynes, that uneth in an olde mannes life can not be iournaide and pursued: what incredible delite is taken in beholding the diuersities of people, beastis, foules, fisshes, trees, frutes, and herbes: to knowe the sondry maners and conditions of people, and the varietie of their natures."

Elyot, it is true, was not thinking of the ordinary schoolboy; he was concerned to elaborate a system of education suited to the needs of English youths of noble birth, whose position demanded a training for public service. In such a scheme Geography appeared to have a two-fold value. On the one hand it was essential to the understanding of history, and on the other it served the purpose of broadening the outlook on men and things. The study was to be based on elementary geometry and a knowledge of maps and globes.

A very similar conception of the scope and method of Geography is set out in Cleland's *The Institution of a Young Nobleman*, 1607.[2] Beginning with geometry the pupil is soon led by way of simple exercises to the drawing of maps. He then proceeds to learn astronomy, mathematical and physical geography. "It is a great shame for a general of an army to be ignorant of the elevation of the Pole, the situation of shires and provinces, the diversities of climate, the length of days and nights, according to the parallels and meridians; not to know the temperatures of the air, the quality of the earth and many such things."[1] In connexion with descriptive Geography, Ptolemy and Merula's *Cosmographia*, dealing with the manners and fashions of foreign people, are to be used, and there must be constant reference to Ortelius' maps, which should be hung up in the schoolroom, as well as to Mercator's globe.

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[1] *The Governour*, 1531. Edited Croft. Vol. I. pp. 76-8.

[2] cf. *Studies in Education during the Age of the Renaissance*, 1400-1600. Woodward. Cambridge, 1906.

Before proceeding further, it is advisable to say something about a few of the larger geographies that had a great influence in directing the development of geographical education in the 16th, 17th, and 18th centuries. These books were variously designated — geographies, cosmographies, chorographies, grammars, histories, and so on—but the particular titles are often very misleading. A Geography is properly a description of the earth as a whole, a body of organized knowledge resting on a number of general principles. It is much more than a series of bird's-eye views of areas treated in guide-book fashion. Similarly cosmography implies a description of the universe, though in the period with which we are dealing the name was commonly synonymous with both Geography and Chorography. Chorography was the term used to denote a descriptive account of a particular area, just as Topography meant a description of a place or area of small extent. Each is, of course, merely a part of Geography.[2] A geographical grammar is properly a body of principles—a system of Geography presenting a comprehensive view of the earth as a whole as well as in its particular (chorographical and topographical) aspects.

Of the ancient geographies that again became generally accessible during the 15th century, the most important are those of Ptolemy[3] and Strabo[4]. The books are essentially different in conception and method. Strabo's work, as he himself says[5] is a Chorography, and not in any sense a system of Geography. Ptolemy's is a mathematical geography. According to Strabo, Geography is a science that has specific reference to the occupations and requirements of statesmen, and it was for such as were engaged in administrative work and for general readers with some knowledge of geometry and of the sphere that the book was intended. Strabo proposed to include only such things as were important, useful, or worthy of recording, because of their permanent character. Minute details were left to the philosophers, since the object was to provide the ordinary educated man with a general notion of the earth's surface, its political divisions, the chief peculiarities of each, together with so much of its history as would enliven and give point to the geographical description. It is interesting to note that he emphasized the importance of studying Geography with the aid of a large globe, preferably one of 10 feet diameter, constructed after the manner of Crates' terrestrial globe, on which were to be drawn meridians and parallels. In describing each area and locality he begins by fixing its position in miles as accurately as possible. He then proceeds to describe the surface, climate, resources, people, history, &c., and availing himself of the best existing writings and checking them by his own first hand knowledge.

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[1] For similar reasons Sir Humphrey Gilbert includes geography with astronomy and navigation in the curriculum of his *Queen Elizabeth's Academy*, 1572, "for education of Her Majesty's wards and others, the youth of nobility and gentlemen."

[2] Cf. Ptolemy.—"Chorography deals with the part *only*—Geography with the *whole*, as the artist who copies an ear only or an eye only is to be distinguished from the artist who paints the whole figure." The one merely depicts *kind*, the other is concerned with *magnitude*, and requires a basis of mathematics. *Geographia*. I, 1.

[3] *V. Claudii Ptolemaei Geographia.* Edidit Nobbe. Leipzig, 1845. 3 vols. Greek text.

[4] *The Geography of Strabo.* Trans. Hamilton & Falconer. Lond., 1854. 3 vols.

[5] *Ibid*, p. 165.

Ptolemy's Geography is altogether different in conception and content. Ptolemy's main interest was in practical astronomy, to which subject Geography was altogether ancillary.[1] It is a matter of everyday experience that celestial phenomena appear different to observers at different places, and before any real progress can be made in recording phenomena for comparative purposes it is necessary to devise some means of fixing exactly the position of each observing station on the earth. This had been realized long before Ptolemy's time (c. 150 A.D.) and it was this need that had stimulated attempts to map out the surface of the globe. Ptolemy's object was simply to construct a map of the earth that should be superior to any already in existence, and for this purpose he brings to bear wide astronomical and mathematical knowledge. Indeed, so important did the mapping of the earth appear that he used the term Geography to imply "an imitative delineation of the earth as a whole" with its parts—"gulfs, harbours, notable cities, peoples, rivers, and other things worthy of note." Geography, in fact, dealt with magnitudes, and was concerned with representing "relative distance, position and general configuration by mere lines and marginal notes (παρασημειώσεων)"[2]

In other words, the geographer was primarily a mathematician concerned with the shape, size, and mapping of the earth and its position in the heavens.

Of the eight books that compose Ptolemy's *Geography* the first discusses the principles of mathematical geography, examines the defects in existing methods of mapping and fixing positions, suggests improvements, and concludes with a description of two methods (one conical, the other globular) of projecting a map upon a plane surface. The remaining seven books are little more than a long index of marginal notes to the various sectional maps, showing the latitude and longitude of places, much like the index in the ordinary Atlas of to-day. Of real description there is very little, thus :—[3]

> Spain, or Iberia, has three provinces—Baetica, Lusitania, and Tarraconensis. The side of Baetica, which looks to the west and

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[1] cf. Ryland's *Geography of Ptolemy Elucidated.* 1893.

[2] *Geographia.* I, 1.

[3] *Ibid.* II, 4.

north, is bounded partly by Lusitania and partly by the province of Tarraconensis. The description of this part is as follows:

	Long.[1]	Lat.
The eastern mouth of the river Anas (i.e. Guadiana) is...	$4\frac{1}{3}$	$37\frac{1}{2}$
The bend of the river to the eastward	$6\frac{1}{3}$	39
The part of the river nearest Lusitania	9	39
And the boundary line between Baetica and Tarraconesis reaches the coast of the Balearie Sea in ...	12	$37\frac{1}{4}$
The sources of the Anas are in ...	14	40

The southern boundary of Baetica is formed by the external ocean with the Straits of Hercules, and to the eastward by the Iberian Sea. The description of this part is as follows, beginning from the estuary of the Anas, in the external ocean:

	Long.	Lat.
Country of the Turdetani—		
Onobalisturia	$4\frac{2}{3}$	$37\frac{1}{2}$
Mouth of the Baetis (Guadalquiver)...	5	37
Sources of the river	12	$38\frac{1}{2}$
Estuary near Astan	6	$36\frac{3}{4}$
Country of the Turduli—		
Harbour of Menestheus	6	$36\frac{1}{3}$
Promontory at the entrance of the straits on which is the Temple of Hera	$5\frac{3}{4}$	36
Mouth of the River Baelon	$6\frac{1}{4}$	$36\frac{1}{6}$
Baelon town	$6\frac{1}{4}$	$36\frac{2}{3}$

Strabo, on the other hand, describes each region after the manner of a guide book; thus his method of dealing with the above region is as follows:

> [2]The first division of this Continent (Europe) towards the west is Iberia . . . The greater part of this country is but little fitted for habitation, consisting chiefly of mountains, woods and plains covered with a light meagre soil, the irrigation of which is likewise uncertain. The part next the north, which borders on the ocean, is extremely cold, and, besides its very rugged character, has no communication or intercourse with other (countries), and thus to dwell there is attended with peculiar hardships. Such is the character of this portion. On the other hand, almost the whole of the south is fertile, especially what is beyond the Pillars (of Hercules). This, however, will be shown more in detail, but we must first describe the figure and extent (of the country). In shape it resembles a hide stretched out in length from west to east, the forepart towards the east, its breadth being from north to south.

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[1] Long. O passed through the Canary Islands.

[2] Book III, Chap. I.

Its length is about 6,000 stadia: the greatest breadth is 5,000; while there are parts considerably less than 3,000, particularly in the vicinity of the Pyrenees, which form the eastern side. This chain of mountains stretches without interruption from north to south (sic.), and divides Keltica (France) from Iberia . . . (The coast is next described in great detail with its people and history, beginning at Cape St. Vincent). The sea coast next the Sacred Promontory forms on one side the commencement of the western coast of Spain as far as the outlet of the river Tagus: and on the other forms the southern coast as far as the outlet of another river named the Anas (Guadiana). Both of these rivers descend from the eastern parts of Spain); but the former, which is much larger than the other, pursues a straight course towards the west, while the Anas bends its course towards the south. They enclose an extent of country peopled for the most part by Kelts and certain Lusitanians whom the Romans caused to settle here from the opposite side of the Tagus. Higher up, the country is inhabited by the Carpetani, the Oretani, and a large number of Vettones. This district is moderately fertile, but that which is beyond it to the east and south does not give place in superiority to any part of the habitable earth with which it is compared, in the excellence of its productions both of land and sea. This is the country through which the river Baetis (Guadalquiver) flows . . .

From this river the country has received the name of Baetica: it is called Turdetania by the inhabitants, who are themselves denominated Turdetani and Turduli . . . (Turdetania is next described with its 200 towns, its commerce and historical associations.) A vast number of people dwell along the Guadalquiver: and you may sail up it almost 1,200 stadia from the sea to Cordoba . . . The banks and inlets are cultivated with great diligence. The eye is also delighted with groves and gardens . . . The Guadiana is likewise navigable but not for vessels equally large, nor yet so far up. It is also bordered by mountains containing metal, and extends as far as the Tagus. Districts which contain metals must, of necessity, be rugged and poor (sic.) . . .

(He goes on to speak of the tides of the coast, and the commerce.) Large quantities of corn and wine are exported from Turdetania, besides much oil, which is of the first quality; also wax, honey, pitch, large quantities of the kermes berry used for dye scarlet, and vermilion not inferior to that of Sinope . . . (also timber, wool, &c. Next the productions of the sea are described at length, then its minerals and climate).

Strabo's knowledge of every part of the habitable earth was naturally not so detailed as that of the countries round the Mediterranean. His information about Britain, for example, was meagre, and mainly drawn from Cæsar's Commentaries. In spite, however, of its limitations, it was incomparably superior to any Geography generally known during the Middle Ages, and, in view of the average level of geographical knowledge at the end of the 14th century, it is not surprising that, first Ptolemy, and then Strabo, opened up a new epoch in geographical compilation. The geographies of the 15th century following Ptolemy emphasized exact location, and neglected description; those of the 16th and 17th centuries were in the main human geographies—histories as they were generally called, but more properly described as chorographies with some history—after the plan of Strabo. To the one tradition we owe the long lists of towns with their latitude and longitude, and the elements of mathematical and physical geography, that are such a marked feature of many text books of the 17th and 18th centuries. To the other we owe the later political geographies and the various attempts at correlating geography and history. To the same period, too, we trace the practice of requiring pupils to memorize the mileage between important towns, the lengths of rivers, the birthdays of sovereigns, of which more in due course.

As already pointed out, Elyot, among others, emphasized the importance of using maps and globes in studying Geography. Accordto Gough[1] the first printed book with maps was the edition of Ptolemy's *Geography*, printed at Ulm in 1452, but the maps did not at all correspond with his descriptions as set out in the tables. The first dated copper plates were the maps in Ptolemy, printed at Rome, 1478. Breidenbach's *Travels to the Holy Land*, Mentz, 1486, and the *Nuremberg Chronicle*, 1493, also had maps. In the 16th century the number gradually increased, though their quality oftentimes left much to be desired, largely through absence of accurate information. Thus the map of Sweden in Sebestian Munster's *Cosmography*, 1544, one of the best known of the new geographies, is described by Gough as a wretched production; so is a map of Russia published by John Kingston, London, 1562. In the 1550 edition of Munster, the map of Britain, besides the names of the three kingdoms and Wales, contains only *Cornwall*, *Ochssufort*, *Dover*, *Londis*, and *Edinburg*. In Camotti's *Atlas*, Venice, 1560, is a map of Ireland (Hybernia nunc Yrlant), with cities marked that never existed, and so on.[2] As an instance of the growing popularity of maps, it may be noted that the first edition of Camden's *Britannia*, 1586, was without maps, four were included in the 1600 edition, and others by Saxton and Norden (two English map makers) in 1607.[3] By 1652 they had so firmly established themselves that Heylyn, in the Preface to his *Cosmography*, finds it necessary to excuse the insertion of only four maps, on the ground of expense and the increased cost of the book to the public.

(To be continued.)

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[1] *Essay on the Rise and Progress of Geography in Great Britain and Ireland*, 1780.

[2] cf. the description of the globe, p. 140.

[3] Mercator's Atlas, 1595. Speed's Maps of English and Welsh Counties, c. 1608.

THE TEACHING OF "SEX HYGIENE" IN SCHOOLS.

By LILIAN DALY, B.A., N.U.I.

THE question of the teaching of "Sex" to school children is coming of late into the arena of educational discussion. And as one listens to, or thinks about, such discussion, certain points obtrude themselves into one's thought—points that it would seem essential to keep before us in attempting to solve the problem under consideration.

Those who would advocate instruction to school children in the hygiene of sex appear agreed that Nature Study is the proper avenue of approach. They appear to base their argument largely on their belief: (a) that this method of procedure will lead a child's mind, without undue mental shock, to a knowledge of the origin of himself; and (b) that knowledge of biological fact will tend to produce right conduct with regard to the functions and powers committed to his care. This, I think, is a fair statement of one side of the case, and I would like to ask whether a certain fallaciousness does not run through it.

First, *is* Nature Study the best approach to the study of Man? Granted that Man belongs, in part, to the order of Natural Being, is there not some danger that by occupying thought too exclusively with the perfection of man's being as a physical organism, we may tend to lose sight too far of the whole truth about him in our interest in one aspect of him. Further, if man is a distinct order of being—and as Christians we hold that he is—marked off from vegetable and animal creation by a Spiritual nature peculiar to himself, is it not questionable science and questionable logic to examine one order of being for the purpose of learning the truth about another and essentially different order?

Secondly, is it true that a child applies his knowledge of natural origins to his own origin without psychological disturbance? The fact that such disturbance often is gone through in secret does not prove its non-existence. Let us be frank with ourselves, and I think in many cases we shall admit that the first realization of our own origin comes—it may be through Nature Study—but comes as much more than a new intellectual fact. The knowledge coming for the first time carries with it a psychological shock that is inevitable in the life of every boy and girl. Life involves shocks of which this is but one—a unique one, perhaps, because it bears a unique relationship to our inmost personality. Another example may help to support my contention on this point. As children we know that other children lose their parents, yet when as a child we lose our own parent, there occurs to us a shock which is but little lessened by our knowledge of similar occurrences in the lives of our companions. Those experiences, which, perhaps, I may be allowed to call respectively the knowledge of impersonal fact, and the realization of personal fact, affect our being in such a totally different way.

Granted, then, that a psychological shock must take place in the due course of a healthy development of personality in its passage from childhood into manhood or womanhood, as educators, is it not our business to forestall for children dangerous crises which we cannot avoid for them. And one feels strongly that the true method of doing this is to give to children earnest and definite teaching about Man in his relation to GOD, in whose image he is made, rather than to emphasize for them facts about Man in his relation to Nature. When the *little* child asks where he came from, surely the truest answer for him is, "From GOD." To try to tell him *how* that is true would be answering a question he is not asking, and explaining to him that which he is not yet in a position rightly to comprehend. In dealing with *older* children, familiarity, on their part, with "Romantic" Literature will be found to supply a valuable background of moral idealism, and will serve to reinforce the religious ideal as a safeguard through an age when a vague curiosity about life is beginning to make itself felt. The knight who seeks to win his lady's favour by his noble deeds; the maiden who gives her love deliberately, and of her free choice, to the man who shows himself worthy of it, are wholesome and lofty conceptions with which to face life. And they make attractive appeal to the minds of boys and girls just growing out of childhood.

One would like to suggest that Romantic Literature is the most attractive and effective medium by which to convey to young people the physical ideal so present to our minds at the moment. The Jews, perhaps more than any other nation, include the notion of physical perfection in the moral ideal. Many details of Hebrew Law show this. The old Hebrew Romantic Literature is full of it. Rebekah, the wife chosen for Isaac, was "very fair to look upon"; Rachel, for whom Jacob did such faithful service, was "beautiful and well favoured"; whereas Leah, whom he rejected, was "tender eyed." David, beloved of Saul's daughter, was of a "beautiful countenance, and goodly to look upon." Saul himself impressed the people with his fine physique. And the race brought up on this law and literature testify to-day in their persons to the educational value and success of such a training.

The lines of approach here indicated would seem in many ways preferable to that of Nature Study. To approach the Human through the less than Human—to attempt to interpret the Rational in terms of the non-Rational—would seem to be dangerous, because inadequate, in its teaching. Moreover, the approach through Nature Study would seem ethically to miss the point. For ethically it would seem more essential to emphasize the difference between Man and the lower creation than to point out what Man shares in common with beings which, in his essence, he rises above in a way that bestows on him a dignity and responsibility impossible to them.

A mind, accustomed in a childish way to regard Man as created "in the image of GOD," may receive a shock when it realizes for the first time how much Man shares, in his nature, with the rest of Divine Creation. The idea that Man, in the perfection of his being, includes—while he exceeds—all that is in being lower than himself, will often, indeed, pass a child's understanding to the extent of producing a period of more or less mental uneasiness, even troubled uneasiness, while the thought is new and unfamiliar. But one questions whether a knowledge of biological fact will be as efficacious in restoring a healthy mental balance as will be a solid grounding in religious and moral idealism.

Because what, after all, do we mean by scientific fact in such a connection? True, human life as a new organic beginning passes through certain physical processes of interest to the biologist or natural scientist, but few will deny that the entry into life of a little child reflects the conception of a psychical "Beyond"—a background of rational affection and purpose—that the kitten or the seedling tree carries no hint of. And surely, again, this spiritual overshadowing in the one case lends a grace and dignity to the coming of the little child that renders "facts" of Nature Study ludicrously inadequate as an explanation of such a creation. So that to many, an attempt to press on children's attention the physical circumstances of an event in its essential nature spiritual, would seem to be a mistake because misleading.

To touch on another part of the problem—what about children whose unfortunate upbringing has rendered them unduly precocious? Children who grow up in the tenement homes of a city slum have life robbed for them of all its mysteries, ennobling or otherwise, at an early age. Here we think our contention holds good, in part at least, because here, too, the evil lies in too much knowledge of human life in one aspect, without enough knowledge of it in others. They grow accustomed to human life's happenings with little or no understanding of human life's idealisms. And the correction needed here also would seem to be more religious and moral idealism about Man's place in Creation, even if they, by reason of their circumstances, should be given more definite biological information about Man's body than children in more protected walks of life.

Or, again, what of the boy and girl of modern Suburbia, as we find them in our schools? Brought up in homes where material prosperity protects them from physical calamity incident to the life of the slum child, have they much better chance of growing a soul? In the well-to-do suburban household, respectability is too often mistaken for morality, and personal pleasure takes the place of civic ideal. Marriage and all that belongs to it becomes a subject of kindly, but none the less vulgar, jest. Love between man and woman as a source of inspiration for life is as unknown here as in a city slum, and therefore the need for implanting human ideals is as crying for this class of child as for the other.

Nor would this point of view seem to conflict with the desire of those whose anxiety is to promote right conduct in the adolescent. For it is but a truism to state that knowledge in itself alone is not a basis of conduct. Conduct would appear to be the outcome of knowledge and emotion together. We do GOD'S will, not in so far as we know what His will is, but in so far as GOD Himself is the object of our devotion. Knowledge of, and sympathy with, GOD'S ambition for Man, as far as one understands and feels about it, together make for virtue on the part of the individual. Therefore to induce a right respect for, and use of, the powers entrusted by GOD to man would require us to stimulate in children a regard for GOD rather than to inform them how such powers function. The drummer boy of the story, who died sooner than use his drum in the service of the enemy, was not kept to his purpose by a knowledge of the mechanism of his drum.

So far, I have had before my mind teaching on the subject of sex to children in school, and in groups, and have questioned the wisdom of offering such teaching, except in special circumstances. Let us consider for a moment our duty to the individual child who desires information. I think we must face the difficulty of supplying his need up to the limit of detailed truth he is capable of understanding, and is desiring to be told. But if it be granted, as I have urged, that truth of this kind is likely to occasion shock, it appears but seemly and courteous that we should respect him to the extent of talking to him privately and individually, and as friend to friend. Children are, as most of us know, shy of "feelings"—especially shy of showing them—and I think to force a child to show feeling before others is apt to rankle in the minds of some as unfair, and to create a feeling of fierce anger against the person who puts him into a position he hates but cannot save himself from. Such angry resentment may destroy the influence of teacher, or, indeed, parent, in a way neither may ever guess, so that we grown-up people would do well to go gently to work, and with due consideration of child nature, before we proceed to act in matters like that before us. And when one considers the different dispositions of different children, developing at different rates, it would seem that teaching of sex hygiene, or of anything else that touches personalities intimately, can be safely done only as individual to individual, and as occasion arises.

To sum up, I do not wish to be understood to deprecate knowledge, nor to imply that truths about the material world are in themselves unlovely. But I beg to submit that the question of sex for Man is a psychological rather than a biological one: that teaching about sex is valuable only when *knowledge* can be made to convey *power* to use such knowledge for the proper conduct of life: that this can be accomplished only by giving such knowledge in closest association with human idealism—moral and religious.

REVIEWS.

"A History of Europe." By Professor A. J. Grant, M.A. (674 pp., 21 maps and plans). Longmans, Green & Co. Price 7/6.

THE exclusion of European history from the curriculum of most Secondary Schools has for some time given both the righteous and unrighteous an opportunity for scoffing. In this respect we fall sadly behind our Continental neighbours, who have long since perceived the necessity of instructing their children in the history and development of nations other than their own. In Germany and France there are many excellent text-books for pupils of all ages on this topic, and the most brilliant and learned of their historians do not disdain to take up the task of writing such. In England, on the other hand, one of the chief difficulties in the way of remedying this defect in our historical teaching has been the lack of text-books which are alike the product of scholarly minds, and which do not repel the eager learner by their "disgusting dryness," as Bishop Burnet said of William III's conversation. Many are the writers who can write with lucid and blithe cheerfulness on the history of the British Empire, but who, directly they turn their pens to the history of the Continent of Europe, fall into sloughs of dismal chroniclings. One feels as one reads their works that doubtless what they write is all true, but it is none the less dispiriting, and that after all the search for knowledge is a dull and dreary quest. On the other hand, many of them there are who skip through history with such vast generalizations, that a fact to the reader is even as an oasis in the wilderness to a weary traveller.

These criticisms cannot be levelled at Professor Grant's History of Europe. It is nothing if not readable, and it is certainly scholarly. From Chapter I, which tells of the world as Homer pictured it, to the last chapter, which describes the main characteristics of the present age, the interest is sustained. In a short preface the author explains the scope and object of his work; which we take it is meant for a text-book for use in the Upper Forms of Secondary Schools, or as an introductory text-book for University students. He says it was written from a conviction that the history of Great Britain could not be understood without reference to European History; at the same time he deprecates those books which make one country hold the centre of the historical stage throughout the ages, regardless of all sense of proportion; for now one country has been paramount in Europe, now another. Each chapter is followed by a few remarks on the books which are recommended for supplementary reading—there is an index, but no tables of dates, or genealogical tables. Perhaps these have been designedly omitted from a desire to prevent the book in any way from associating itself with "Dry-as-dust." The excellent maps have been prepared by Dr. Emery Walker, and ten of them are coloured. The book itself is divided into three parts—the Classical World, the Middle Ages, and Modern Europe. Doubtless in time it will be obtainable in separate parts, otherwise it is perhaps rather expensive for an ordinary school text-book. The average parent will pay 2/6 or 3/6. 5/- raises a spirit of gloom, and 7/6 is often prohibitory.

In his preface Professor Grant says there are many great statesmen, and many battles of which there is no mention in his volume. His justification is that he has not aimed at making his book a compendium of dates and facts. Even if one accepts this defence, some of his omissions are a little surprising. For instance, one sentence only is allotted to Erasmus in the story of the Reformation, whilst many pages are given to Calvin, and at least one paragraph to Zwingli. Erasmus as merely "the great Dutch scholar who felt uneasy in either camp and refused to join with Luther." There is no mention of Wyclif in the index, though some little space is very properly given to the influence of his teaching upon Huss. The name of Savonarola does not appear. Again, in the earlier part of the book it is a little irritating to be told of Alcebiades after his final deposition from the Athenian command "that he nearly disappears from history." It would not have taken many more words to tell what did become of him; or, again, to find the Retreat of the Ten Thousand not mentioned by its historic name. To be told merely "that they made their way back to the coast in spite of all the efforts of the Persians to stop them" is a little dull. Here and there, too, one comes across an awkward phrase such as that Plato's speculations "extended wide outside of his own circle of followers," and one is tempted to wonder if the book had a pre-existence in lecture form. It would also be interesting to know why none of Mr. Trevelyan's books are included in those recommended for the study of the National rising in Italy, and why Prescott's life of Philip is apparently preferred above that of Martin Hume.

But criticisms such as these perhaps seem ungrateful, for much of the work is so masterly, as, for example, the admirably-lucid chapter on the French Revolution, that it is certain Professor Grant has furnished a book which will be welcome alike to teachers and taught, both as an educational tool and as a stimulus to further study. M. O. DAVIS.

"The Fundamentals of Psychology: A brief account of the nature and development of mental processes for the use of teachers." By Benjamin Dumville, M.A., F.C.P., London, 1912. 8vo. pp. viii, 382.

MR. DUMVILLE'S book appears to me to have many merits. He starts from a very moderate and sane conception of the bearing of psychology upon education, and the educational conclusions which he draws from psychological principles are throughout just and well-considered. He expresses the hope in his Preface that the psychology expounded therein will be found thoroughly "sound," and it certainly deserves that commendation. His mode of exposition is not always simple, despite well-chosen illustrations, and I think that in places readers who have no previous knowledge of the subject will be considerably puzzled; but I am not sure that for the more capable of them that is altogether a disadvantage.

The author has chosen to follow the usual order of statement—Mind and Body, Preliminary Analysis, Sensation, Perception, Imagination, Ideation, Memory, followed by chapters on Feeling and on Conation—except that he has reserved his treatment of Attention till the end. When everything involves everything else, the order chosen must be rather arbitrary, but on the whole it seems better to take Attention earlier; and is it not really safer, at any rate for readers not versed in philosophy, to take Sensation after Perception?

The criticisms which I would make on the book are three. In the first place, I think there is far too much physiology in it. Important though physiological knowledge is to the master of psychology, I do not believe that the pictures of the brain and other adornments of our text-books are of any use to the beginner. He is likely to get a wrong conception of his study from the outset, and to suppose that he has understood a point in psychology when he has named a fact in physiology. I find passages in this book which, entirely against the author's intention, would certainly encourage this misconception in the uninstructed.

In the second place, it is inevitable that in what is really a "manual" and not merely a "sketch," the author should tread at times on philosophical ground, and there I find him difficult to follow, more especially in his account of sensations. His notion of sensations is extraordinarily elusive, and at times his statements about them seem inconsistent with one another; but as far as I understand them, they lead direct to a subjective idealism which he wishes to repudiate. I feel much the same difficulty about his use of "idea" and of that horrid word "ideation."

My third criticism concerns the publishers. Perhaps the eyes of youth are stronger, but I find the text desperately straining to the sight. Three or four lines less on each page would make a great difference.

Mr. Dumville has written a useful book, which will doubtless reach another edition. I feel sure that alterations in these three points would greatly extend its utility. T. L.

"Character in the Making." By Abel R. Jones, M.A., B.Sc., Ph.D. (viii+142 pp.) J. Murray.

PROBABLY it is because Dr. Jones has tried to write for parents and social workers as well as teachers, that he has not succeeded in producing a book which, in its details at any rate, will bear serious examination. In his effort to be popular he is sometimes vague to the point of complete absence of meaning, and at others he is led into something like inaccuracy. "There can be no doubt," he writes, "that in those people whose instinctive activity is habitually kept down, the power of instinct becomes in time considerably less." Is this a truism or the result of psychological inquiry? "If there were no beginnings, the future of the child would depend almost entirely upon parents and teachers. *Thus there would be immense responsibility, but no possibility of education.*" (The italics are ours.) What can this possibly mean? "The fact that instinctive actions can be performed without previous education in the details of their performance is most important, and the educator who values economy should not fail to make the most of a priceless asset which is at his disposal." Ought not the writer to have tabulated the performances which our pupils accomplish in this way? One notes, too, that Dr. Jones likes illustrations which savour of the religious tract. "It is no uncommon thing for the son of a religious home, who has been long on the down grade, on returning to his rooms in a drunken frenzy, and using the vilest language, to fall on his knees in a praying attitude by the side of his bed—so tenaciously do the habits of childhood persist."

The plan of the book seemed likely to be fruitful, but the treatment of the topics is disappointing, particularly that of the earlier chapters. J. A. G.

"The Interpretation of Dreams." By Prof. Sigmund Freud. Translated from 3rd Edition by Dr. A. A. Brill. (xiii + 510 pp.) G. Allen & Co. 15/- net.

IT is impossible to do more in this place than to introduce this book to the notice of the dreamer (and who does not dream at times?) who happens also to be interested in psycho-analysis. He will already have heard of Freud's work, and he will be ready to welcome a good example of it in an English dress. The book is placed on the market under restrictions. It is to be sold only to members of the Medical, Scholastic, Legal and Clerical professions. Though not a popular book in any sense, it is written with a freedom from unnecessary technicalities which will make it available to those who have had not a special psychological training.

The first chapter is given up to a learned survey of all Dream Literature which has any claim to be considered scientific, after which the author describes his method of procedure in the treatment of dreams, and then sets out upon his own thesis, which is sufficiently startling to command attention, viz., that all our dreams represent the fulfilment of our wishes. If these have been so secret that we dared not give them utterance even to ourselves, they are all the more likely to find their satisfaction in the dreamworld. But this does not usually take place in the simple or recognizable forms; all kinds of distortions affect the content of the dreams so much that only the most acute and frank research into past mind history will reveal the origin of the elements of which the dream is composed.

Without attempting to criticize the ingenuity of the analyses to which Professor Frend subjects the many dreams he brings into service, we may commend the book as typical of the author's methods. It is not given to all psychiatrists to create a new way of approach to their subject. This, Freud and his colleagues have done, and although their ideas have not yet found universal acceptance, they have given a new interest and direction to the study of mental disease which is sure to react favourably upon normal psychology and to throw light upon the many problems of pedagogy. We ought to add that the translation is a thoroughly readable one.

J. A. G.

"The Service of the Hand in the School." By Woutrina A. Bone. Longmans, Green & Co., 1913. (pp. 212 + xviii.) 3/- net.

THERE could be no better evidence of the vitality of primary education in this country to-day than the unmistakable dissatisfaction of teachers themselves with the results of their work. A century's experience of popular education has shattered many idols. The strong rationalism of the early Radicals saw an approaching millenium in the universal dissemination of the 3 R's. Robert Owen saw it in the cultivation of right habits through the affections. Stow, with true insight, looked to a real education that should touch the whole man, that should stimulate a self-active inner development. And the record of school practice during the century is a record of so many discarded devices to attain the ideal. The rote learning of words gave place to rote learning in presence of objects (so-called concrete teaching), these in turn gave place to stereotyped object lessons, these to "training" lessons calculated to touch the understanding; next, the barrenness of the curriculum was to be vitalized by the introduction of liberal studies—literature, history and natural philosophy—and so the change went on. After the worship of the intellect came the worship of the hand, soon discredited as being equally one-sided and containing only a part truth. With the 20th century, teachers in the bulk have realized the problem more clearly than ever before. In the effort to cultivate all that is best in the individual, to stimulate inventiveness, practical capacity, reverence, manliness, good fellowship, Handwork, properly understood, seems to possess elements of real value in touching the inner life of the child, calling forth effort and worthy purpose. The problem of ways and means is beset with difficulties, but teachers who are face to face with the problem. who realize the true meaning of a "practical education," will derive many helpful suggestions as to the materials and possibilities of Handwork, especially with younger children, by studying the present book. It is pleasingly got up, and written by an enthusiast, and there is much in it calculated to provoke discussion.

C. BIRCHENOUGH.

BOOKS RECEIVED.

(Several books noticed here are reserved for review in a later issue.)

"Culture, Discipline and Democracy." By A. D. Yocum, Ph.D., Professor of Pedagogy, University of Pennsylvania. (x + 320 pp,) Sower & Co., Philadelphia. 1 dol. 25c.

[An interesting attempt to solve the educational problem on fundamental lines. The analyses of terms like Culture and Discipline are acute and arresting.]

"Studies in Foreign Education," with special reference to English Problems. By Cloudesley Brereton, M.A. (316 pp.) G. Harrap & Co. 5/- net.

[For the most part a reprint of articles and lectures which have appeared in educational and other periodicals.]

"A Textbook in the History of Modern Elementary Education." By S. C. Parker. (xxiv + 505 pp.) Ginn & Co. 6/6 net.

"Educational Ideals and a Valiant Woman," a Contribution to the Educational Problem. By M. F. (xiii + 303 pp.) G. Harrap & Co. 3/6 net.

"**The Demonstration School Record.**" No. II. Edited by Professor J. J. Findlay, M.A. (xxiii + 283 pp.) University Press, Manchester.

"**Experimental Studies in Mental Defectives.**" By J. E. Wallace Wallin, Ph.D. (vi + 155 pp.) Educational Psychology Monographs, No. 7. (120 pp.) Warwick & York. 1 dol. 25c.

"**Primary Artisan Education.**" By W. P. Welpton, B.Sc. (xix + 252 pp.) Longmans. 3/6 net.

"**A Book of Ballads for Boys and Girls.**" Selected by J. C. Smith and G. Soutar. (199 pp.) Clarendon Press. 1/4.

[An excellent selection, systematically arranged, each ballad having a short introductory note. The general introduction catches the spirit of ballad admirably.]

"**Elizabethan Lyrists and their Poetry.** By Amy Cruse. "**Horace and his Poetry.** By J. B. Chapman. (Poetry and Life Series.) G. Harrap & Co. 10d. each.

"**Longmans' Modern French Course.**" Pt. I. By T. H. Bertenshaw, B.A., B.Mus. (vi + 162 pp.) 1/6 (Pupils' Edition).

"**Moral Instruction.**" By F. J. Gould. (xii + 196 pp.) Longmans, Green & Co. 2/6.

"**Variations in the Grades of High School Pupils.** By C. T. Gray, A.M. (Educational Psychology Monographs, No. 8). (120 pp.) Warwick and York. 1 dol. 25c.

"**Method in Teaching.**" By the Rev. A. R. Osborn, M.A. (151 pp.) Hy. Frowde. 2/-.

[This nicely-printed little book is meant for Sunday School Teachers. It is conceived on Herbartian lines, and has special chapters on the The Art of Questioning, Illustrations, together with another containing a variety of practical hints and suggestions.]

"**The Courtis Tests in Arithmetic.**" New York, 1911-12.

[A Report by Mr. Courtis on the results of his recent Inquiry, with an introduction by Professor Hanns. The report forms Part II of a general report on "Educational Aspects of the Public School System of the City of New York."]

"**School Janitors, Mothers and Health.**" By Helen C. Putnam, M.D. (ix+201 pp.) American Academy of Medicine Press. 1d.

[Dr. Putnam has reprinted in book form her serial contributions to the *Child-Welfare Magazine*. These articles were written in the main for mothers, and they are concerned to show how mothers acting in concert may improve the "housekeeping" of the schools. The style is necessarily chatty, and the book suffers a little from disjointedness. Nevertheless, the unconventional and concrete treatment of the various topics (school painting, washing, sweeping, dusting and the like) make it attractive reading, and we may profitably underline the motto of the book, *Health Habits educate more than Health Maxims*. With the author's plea for special training for School Caretakers we have much sympathy. As a practical contribution to School Hygiene the book may be warmly commended.]

The Journal of
Experimental Pedagogy
AND
Training College Record.

EDITED
(on behalf of the Training College Association) by
PROFESSOR J. A. GREEN,
The University, Sheffield.

THE purpose of the Journal is primarily to promote pedagogic research. To that end, a first place will be given to original enquiries bearing on pedagogic problems. Articles on the psychological aspects of education, on educational ideals, &c., will also be published from time to time.

Literary communications should be addressed to the Editor. Responsibility for opinions expressed in the Journal rests solely with the writers. In no case is responsibility to be attached to the Association.

The publication of the Journal is made possible by special annual subscriptions from various Training Colleges and from persons interested in pedagogic enquiry.

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Copies of Nos. 1, 2, 3, 4, and 5 (making the first volume of the Journal, 423 pp.) may still be had from the Editor or from the Publishers. **5/-** post free.

Vol. 2, No. 3. December, 1913.

BEN-SIRA ON WISDOM, LEARNING AND EDUCATION.

By GERALDINE E. HODGSON, Litt. D.

Mr. Quick once hinted that the student of education might learn much from the Book of Proverbs. As that suggestion bore little conspicuous fruit, it seems likely that the much later book, *Ecclesiasticus*, has exerted no formative influence on education. Perhaps this neglect of the sapiental books has not been altogether sapient.

In reality *Ecclesiasticus* is a treatise on education in the very widest sense of the words:—"My grandfather Jesus, having much given himself to the reading of the law, and the prophets, and the other books of our fathers, and having gained great familiarity therein, was drawn on also himself to write somewhat pertaining to instruction and wisdom, in order that those who love learning, and are addicted to these things, might make progress much more by living according to the law."[1]

Though it lays down that there is a law of living rightly, inferentially therefore a law of education for life, the book observes no strict order of subject-matter. If it is really to influence modern thought, it seems necessary to break up its somewhat diffuse plan, and rearrange it in something like a formal sequence. It treats of Wisdom, Learning and Education: as the first is obviously fundamental to the other two, a re-arrangement may choose that order. No unbiassed reader can doubt that, in Ben-Sira's opinion, wisdom comes to mankind from without, is intuitional, not experiential. There are, perhaps, two phrases which have wrought more disasters in human thought than any others, viz., *it must be*, *it cannot be*. The one is the favourite phrase of the ultramontane of all schools, and the other of the materialist; they are alike rationalistic in origin: both constitute human reason the arbiter of Divine ability. Instead of either, Ben-Sira says *it is;* his ground being that such, and not otherwise, is God's revelation. His position leaves no room for that demonstration, accurate, almost tangible, on which the "exact sciences" rest: not to the realm of ratiocination but to that of simple reception he invites his readers. If they will not come, then the rest is hardly for them; at any rate authority is gone: as one, among competing systems, it still might have some attractiveness. Though they do not express it so, ordinary people seem to have accepted the supposition that knowledge, and even wisdom, are won by understanding and reason "working over" the manifold of sense: hence they may be startled, annoyed even, by the Intuitionist's calm announcement—

> All wisdom cometh from the Lord,
> And is with Him for ever,[2]

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[1] *Ecclus.*, Prologue.

[2] *Ecclus.* i, 1.

a point emphasized in the question and answer—

> To whom hath the root of wisdom been revealed?
> And who hath known her shrewd counsels?
>
> . . . . .
>
> The LORD sitting upon His throne:
> He created her,
> And saw, and numbered her,
> And poured her out upon all his works.[1]

The act of "pouring out upon" is indeed remote from the process which Dr. Chandler called the groping after truths by the piecemeal processes of the discursive understanding.[2]

Even more definitely than the two English versions, the Vulgate attributes a divine origin to Wisdom. Prior to the above question and answer comes another question which the A.V. renders: "Who can find out the height of heaven, and the breadth of the earth, and the deep, and wisdom?" and the R.V.: "The height of the heaven and the breadth of the earth, and the deep wisdom who shall search them out?"[3] while they translate the answer identically, "Wisdom hath been created before all things, and the understanding of prudence from everlasting."[4] But the Vulgate reads: "*Altitudinem coeli et latitudinem terræ et profundum abyssi quis dimensus est? Sapientiam DEI præcedentem omnia quis investigaverit*"? As Dr. Oesterly says[5]: "The Vulgate is the 'Old Latin' Version which S. Jerome did not alter"; a version the use of which he pronounces "precarious," though he adds "at the same time it cannot be neglected." However, without the aid of a doubtful passage, Ben-Sira's intuitional view of wisdom is clear: to him it was not an opinion which human reason evolved slowly from the experience of mundane life, for he excludes that in his description of its way of coming—

> To fear the LORD is the beginning of wisdom.[6]

But the wise man probes deeper for the "way of wisdom" than in such familiar ground, and finds the true way in something else than fear—

> She is with all flesh according to His gift;
> And He gave her freely to them that love Him—[7]

præbuit illam diligentibus se, as the Vulgate reads, and again—

> If thou desire wisdom keep the commandments
> And the LORD shall give her unto thee freely.[8]

Here surely, in a Writing which Dr. Oesterley dates as approximately B.C. 190, is the mystical way of knowledge—obedience and love "casting out fear," paving the way for illumination—elaborated after in *S. John*: "If any man wills to do His will he shall know of the doctrine."[9] We may compare a later writer still: "By love He may be gotten and holden, but by thought of understanding never."[10]

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[1] Ibid i, 6, 8, 9.

[2] *Ara Coeli*, by the Bishop of Bloemfontein, p. 3. The exact words are:—"Intuitive insight into GOD, who is the Truth, had ceased, and it," (i.e., reason) "had to grope after truths by the piecemeal processes of the discursive understanding."

[3] *Ecclus.* i, 3. [4] Ibid, 4.

[5] Cambridge Bible for Schools and Colleges, by W. O. E. Oesterly, D.D., p. cii.

[6] *Ecclus.* i, 14. [7] *Ecclus.* i, 10. [8] *Ecclus.* i 26. [9] *S. John* vii, 17.

[10] The Cloud of Unknowing, ch. vi.

Ben-Sira is as emphatic as *S. John* upon the function of will, a fundamental necessity often slurred over or minimized now—

My son, if thou wilt, thou shalt be instructed,
And if thou wilt yield thy soul thou shalt be prudent.
If thou love to hear, thou shalt receive ;
And if thou incline thine ear thou shalt be wise.[1]

He asks for no watery emotion, but for that love which can toil and serve—

Bring thy feet into her fetters,
And thy neck into her chain.
Put thy shoulder under her and bear her,
And be not grieved with her bonds.
Come unto her with all thy soul,
And keep her ways with thy whole power.
Search and seek, and she shall be made known unto thee ;
And when thou hast got hold of her, let her not go.

. . . . .

If thou seest a man of understanding, get thee betimes unto him,
And let thy foot wear out the steps of his door.
Let thy mind dwell upon the ordinances of the LORD,
And meditate continually in His commandments.[2]

As we read there flashes into memory counsel given some seventeen centuries later, which itself came, originally, from a "sapiential" writer: "Since, according to Solomon the Sage, wisdom never enters into an evil mind, and knowledge unillumined by conscience is the soul's ruin, you must serve, love and fear GOD."[3]

According to Ben-Sira the acquisition of wisdom is no one-sided affair: if there be definite means of winning her, she, on her side, has special ways with her children—

Wisdom exalteth her sons.

. . . . .

And he that giveth heed unto her shall dwell securely.

. . . . .

For at the first she will walk with him in crooked ways,
And will bring fear and dread upon him,
And torment him with her discipline,
Until she may trust his soul, and try him by her judgments :
Then will she return again the straight way unto him,
And will gladden him, and reveal to him her secrets.
If he go astray, she will forsake him,
And give him over to his fall.[4]

This extremely explicit, hard, steep path is irrevocably parted from all modern "learn-what-you-like-how-you-like" methods, and yet how coincident with our actual experience of "getting wisdom," if we happen to have begun to do so. If one will thus follow wisdom what shall his reward be? Dangerous gifts—*knowledge in her secrets*[5]*; security, high position, joy, a crown of gladness*, and *an everlasting name*[6]—

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[1] *Ecclus.* vi, 32, 33.
[2] *Ecclus.* vi, 24-27, 36, 37.
[3] *Pantagruel*, Bk. ii, ch. viii.
[4] *Ecclus.* iv, 11, 15, 17-19.
[5] *Ecclus.* xiv, 21.
[6] *Ecclus.* xv, 4-6.

and yet safeguarded from the vices and snares of mere mundane success, and from the risks of worldly vanity, folly, and insincerity, for

Foolish men shall not obtain her;
And sinners shall not see her;
She is far from pride;
And liars shall not remember her.[1]

Once more, if wisdom have a way with her own children, so too she has a method with the foolish. It is to be feared that Ben-Sira was an aristocrat, not in coarse material ways but in the region of intellectual and spiritual concerns. In spite of all our modern talk about the desire for education, those whose lot it is to attempt to satisfy the supposed demand, are not seldom sceptical as to its reality, extent, and meaning. An education for which someone else pays, the drudgery of which is put, so far as possible, on to the teachers' backs, is hardly, surely, an object of burning desire to the recipient. At the end of the sixteenth century, Mulcaster in good set terms informed his countrymen that only some persons are endowed with the scholar's gifts; and further, that a community cannot conveniently support an undue proportion of learned persons. He observed lastly that if the number fitted by their personal gifts to follow learning outstrip the number indicated by the country's convenience—a contingency he did not anticipate—then the individual must bow before the common weal, and the would-be scholar must adopt some other occupation.[2]

Many centuries before the first Head Master of Merchant Taylors' threw this tepid water over his compatriots, Ben-Sira had fathered a far more drastic theory; more drastic in so far as his "wisdom" is preferable to Mulcaster's scholarship. His scathing phrases remind us of the Gospel's awful warning, for his wisdom is no mere sagacity or knowledge; it contains moral, spiritual elements; it comes near to being identified with Goodness, as if indeed, wisdom and goodness were but two aspects of one Eternal Absolute. "Strait is the gate and narrow is the way which leadeth unto life, and few there be that find it,"[3] said our LORD, as He preached to the multitudes assembled on the hill sides above the Galilean shore. The few wise whom Ben-Sira expects to find excepted, as he describes Wisdom's ways with those who are not her children, closely resemble the few who pass through the strait gate and along the narrow way:—

How exceeding harsh is he to the unlearned!
And he that is without understanding will not abide in her.
As a mighty stone of trial shall she rest upon him;
And he will not delay to cast her from him.
For wisdom is according to her name, and she is not manifest unto many.[4]

Finally, he sings a pæan, a ringing chant of praise, describing Wisdom's divine origin and nature:—

I came forth from the mouth of the Most High,
And covered the earth as a mist . . . .
My throne is in the pillar of the cloud,
Alone I compassed the circuit of heaven.[5]

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[1] *Ecclus.* xv, 7, 8.
[2] *The Positions.* Richard Mulcaster. Ch. ch. xxxvi, xxxvii.
[3] *S. Matt.* vii, 14.
[4] *Ecclus.* vi, 20-22.
[5] *Ecclus.* xxiv, 1-22, 32-34.

Intangible as a vapour, as beyond mere mortal reach as heaven overhead, "in every people and nation" wisdom "got a possession," until the Divine fiat circumscribed her domain—

> Let thy tabernacle be in Jacob, and thine inheritance in Israel.

Thenceforward, wisdom flowed forth in fragrance like "cinnamon and aspalathus," rose in the sight of men like clouds of incense, gleamed about their daily life with the freshness of the dawn, beckoned them like some beacon-fire to their far-off goal.

Yet Wisdom is not for ever on the heights, nor always busied about heavenly things; it has its lower aspects—knowledge, understanding, and with these practical matters Ben-Sira deals carefully. He calls our attention to a point of first-rate importance, the function of will in knowledge; he indicates that without free-will, morality right-doing could have no content, and the word "ought" no meaning—

> He Himself made man from the beginning,
> And left him in the hand of his own counsel.
> If thou wilt thou shalt keep the commandments;
> And to perform faithfulness is of thine own good pleasure.
> He hath set fire and water before thee:
> Thou shalt stretch forth thy hand unto whichsover thou wilt.
> Before man is life and death;
> And whichsoever he liketh, it shall be given him.[1]

A more beautiful description of GOD'S other gifts to the children of man could hardly perhaps be written than that in the first eleven verses of the fifteenth chapter: it covers the gifts of the physical world, man's set relations with the rest of the creatures, and the endowments of sense, reason, and understanding peculiar to himself.

If Ben-Sira be asked for the aptest season for the acquisition of knowledge, he will answer that every moment is the right one; that no age has any time to waste on non-learning:—

> My son, gather instruction from thy youth up:
> And even unto hoar hairs thou shalt find wisdom.[3]

The need for cleverness, which yet has its strict limitations, is a curiously interesting feature of his theory. The phrase "mere cleverness" occurs rather frequently but unprecisely in modern pedagogic literature. Ben-Sira is more accurate—

> He that is not clever will not be instructed.
> And there is a cleverness which maketh bitterness to abound.[1]

The Authorized Version translates πανουργία by wisdom, πανοῦργος by "wise": the Vulgate reads *sapiens in bono* and *sapientia;* the Revised Version substitutes *cleverness*, Dr. Oesterley suggests *subtlety*.

Only two verses further on, Ben-Sira describes the fact from the other side—

> The inward parts of a fool are like a broken vessel;
> And he will hold no knowledge.[4]

Of practical lessons can this generation learn from Ben-Sira one more apt than the right relation between wealth and cultivated wisdom?

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[1] *Ecclus.* xv, 14-17. [2] *Ecclus.* vi, 18. [3] *Ecclus.* xxi, 12. [4] *Ecclus.* xxi, 14.

In England of elder days rich men were content to give their wealth for the endowment of Learning, and to leave its precise disposition to experts, persons who, possessing learning themselves, might be supposed to know its requirements. From these sound ways modern men are departing; some vulgar notion of the payer of the piper calling the tune seems to have obsessed the minds of rich but not highly cultured donors: and the materialistic trend of so-called education in not a few modern institutions offers a painful object-lesson of new methods. What says Ben-Sira?—

> It is not right to dishonour a poor man that hath understanding;[1]

and again,—

> A poor man is glorified for his knowledge,
> And a rich man is glorified for his riches.[2]

This seems to separate them irrevocably, to assume that a rich man will never possess knowledge. The next verse, of which there is more than one reading, in the Revised Version scarcely conceals the writer's irony—

> But he that is glorified in poverty, how much more in riches?
> And he that is inglorious in riches, how much more in poverty?[3]

His contempt for the current view of the relative positions of rich and poor is palpable—

> When a rich man is fallen there are many helpers;
> He speaketh things not to be spoken and men justify him:
> A man of low degree falleth, and men rebuke him withal;
> He uttereth wisdom, and no place is allowed him.
> A rich man speaketh, and all keep silence;
> And what he saith they extol to the clouds:
> A poor man speaketh, and they say, Who is this?
> And if he stumble they will help to overthrow him.[4]

To us, so apt to pride ourselves on our scientific accuracy, to claim a precision of fact, a care for reality, which we choose sometimes to say were foreign to our forefathers, Ben-Sira's counsel, concerning the need for actual data, may come as a corrective hint—

> Blame not before thou hast examined:
> Understand first and then rebuke.
> Answer not before thou hast heard;
> And interrupt not in the midst of speech.[5]

The nature of the facts is immaterial: the recommendation covers every kind of knowledge; everywhere it behoves us not to judge that which is imperfectly known to us. Where accurate knowledge proves impossible, Ben-Sira recommends that attitude of mind beloved by Michel de Montaigne, the mood of suspended judgment—

> in the last end of a man is the revelation of his deeds.
> Call no man blessed before his death—

and he goes one terrible step further—

> And a man shall be known in his children.[6]

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[1] *Ecclus.* x, 23. [2] *Ecclus.* x, 30. [3] *Ecclus.* x, 31. [4] *Ecclus.* xiii, 22, 23.
[5] *Ecclus.* xi, 7, 8. [6] *Ecclus.* xi, 27, 28.

It is interesting nowadays to notice the function in the community which Ben-Sira assigns to those who have really acquired genuine knowledge, and have cultivated wisdom—

Let us now praise famous men.

. . . . .

Such as did bear rule in their kingdoms,
And were even renowned for their power,
Giving counsel by their understanding.

. . . . .

Leaders of the people by their counsels,
And, by their understanding, men of learning for the people.[1]

Dr. Gore, preaching in S. Paul's Cathedral to the Guild of S. Luke, years ago, remarked that a really intellectual democracy is an impossibility. It is so partly owing to economic conditions which might possibly be altered, but far more to the radical disinclination of the majority for that drudgery of acquisition without which real wisdom is a dream; a natural distaste beyond the power of human legislation or arrangement to remove.

Ben-Sira's reference to Solomon[2] illustrates the function of wisdom which he had already described. Nor did he fail to seek for himself this so admirable thing—

When I was yet young,
Or ever I went abroad,
I sought wisdom openly in my prayer.
Before the temple I asked for her
And I will seek her out even to the end.
From her flower as from the ripening grape my heart delighted in her.[3]

In the department of education proper, Ben-Sira offers a mass of preceptual wisdom. Any writer who is a thorough-going intuitionist will pretty certainly care for tradition: he is no exception—

Miss not the discourse of the aged,
For they also learned of their fathers:
Because from them thou shalt learn understanding,
And to give answer in time of need.[4]

Among a race so prone as the Jews to value children highly, his view is strangely chill and depressed—

Desire not a multitude of unprofitable children,
Neither delight in ungodly sons.
If they multiply delight not in them
Except the fear of the Lord be with them.
Trust thou not in their life,
Neither rely on their condition:
For one is better than a thousand,
And to die childless than to have ungodly children.[5]

Nor is his mood much more cheerful when he writes—

A father hath shame in having begotten an uninstructed son,
And a foolish daughter is born to his loss.[9]

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[1] *Ecclus.* xliv, 1, 3, 4. [2] *Ecclus.* xlvii. [3] *Ecclus.* li, 13-15. [4] *Ecclus.* viii, 9.
[5] *Ecclus.* xvi, 1-3. [6] *Ecclus.* xxii, 3.

But there are some question-raising points here. Whether we read *uninstructed* (R.V.), *evil-nurtured* (A.V.), or *indisciplinatus* (Vulg.), we could argue against Ben-Sira that the fault is at least as much parental as filial. Human beings, as Erasmus interestingly suggested, are born—not, like the lower creatures, with an instinct operative from the first instant of sentient life, and unimprovable by practice—but with *capacity* capable of improvement by training, instruction, and practice. If Ben-Sira would not have denied, he certainly writes as if he had temporarily forgotten it.

This is not the most curious fact, however. The Greek text and the Vulgate have no equivalent for *foolish*, prefixed by the English versions to daughter. Dr. Oesterley points out that most commentators have assumed that the writer's meaning is that an ignorant son is a disgrace, an ignorant daughter a positive loss. He argues that the Greek text may be quite accurate, " Ben-Sira may mean that to beget a daughter at all is as bad as begetting an uninstructed son; this is a thoroughly Jewish sentiment."[1] He bolsters this up by reminders of Jewish thanksgivings that GOD had not made the grateful worshipper a woman. However ungallant the Jewish feeling for women may have been, this extreme position seems hardly justified in the present case, for in the very next verse Ben-Sira observes—

A prudent daughter shall inherit a husband of her own;
And she that bringeth shame is the grief of him that begat her;—

Words which if not highly complimentary, seem to indicate degrees of inferiority, even in daughters.

Surely, a truer view is that Ben-Sira was thinking not of children in general, but, as he says, of those who are unprofitable. To say that such exist is not to say that all are such: moreover, in the third chapter, he has regarded children as cheerfully as the rest of us; what could anyone say more than—

The LORD hath given the father glory as touching the children,
And hath confirmed the judgment of the mother as touching the sons.

. . . . .

In deed and word honour thy father,
That a blessing may come upon thee from him.

. . . . .

Glorify not thyself in the dishonour of thy father;
For thy father's dishonour is no glory unto thee.
For the glory of a man is from the honour of his father;
And a mother in dishonour is a reproach to her children.
My son help thy father in his old age;
And grieve him not as long as he liveth,
And if he fail in understanding have patience with him.

. . . . .

For the relieving of thy father shall not be forgotten;

. . . . .

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[1] Camb. Bible for Schools and Colleges. *Ecclesiasticus*, by W. O. E. Oesterley, D.D. p. 145.

In the day of thine affliction it shall remember thee;
As fair weather upon ice,
So shall thy sins also melt away.
He that forsaketh his father is as a blasphemer
And he that provoketh his mother is cursed of the LORD.[1]

It is a very genuine bond of service binding parents and children, this; in *deed* and *word* honour thy father. This surely is a high level of conduct: how many of us more than attain it, do none of us in these days fall far below it? The question naturally arising is—what training can ensure that parents shall enjoy the comfort of children so filial, so dutiful? It is no primrose path of ease, no indulgent method of allowing children full right of choice—

Hast thou children? correct them,
And bow down their neck from their youth.[2]

Dr. Oesterley notes that the Greek and Hebrew verbs—rendered in English *correct*—signify, if primarily, chastisement, yet secondarily, admonition and instruction. The Vulgate employs the imperative *erudi*. Evidently Ben-Sira approved of violent correction—

He that loveth his son will continue to lay stripes upon him,
That he may have joy of him in the end.
He that chasteneth his son shall have profit of him,
And shall glory of him among his acquaintance.[3]

Doubtless this was the idea of education largely current or which had been current among the Jews. The Book of Proverbs is ascribed to the literary outburst in the reign of Hezekiah (726-697 B.C.) Its admonitions on correction are familiar—

Foolishness is bound in the heart of a child, but the rod of correction shall drive it from him[4]; and again
Withhold not correction from the child; for if thou beatest him with the rod, he shall not die.[5]

The Book of Lamentations, called forth by the fall of Jerusalem (586 B.C.) is more than a century later, but there too the salutary function of correction is insisted on—

It is good for a man that he bear the yoke in his youth.[6]

If it were the current doctrine of Judea in Ben-Sira's time, he might have risen above it, had he thought something else better. We know how common violent beating was in the schools of the sixteenth century: yet Erasmus, Ascham, Elyot, Mulcaster, and Montaigne dared to condemn it; Ascham, in a classical passage:—"My purpose was hereby plainly to utter what injury is offered to all learning, and to the commonwealth also, first by the fond father in choosing, but chiefly by the lewd schoolmaster in beating and driving away the best natures from learning." Like Peter Paul Vergerius who thought "names of which they need not feel ashamed" the first of the three duties parents owe their children, Ben-Sira insists on the value of this possession—

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[1] *Ecclus.* iii, 6, 8, 10-12, 14-16. [2] *Ecclus.* vii, 23. [3] *Ecclus.* xxx, 1-2. [4] *Prov.* xxii, 15. [5] *Prov.* xxiii, 13. [6] *Lamen.* iii, 27.

Have regard to thy name;
For it continueth with thee longer than a thousand great treasures of gold,
A good life hath its number of days;
And a good name continueth for ever.

On the higher virtues which education should foster, he insists too. The greatest is that which most of us acquire last, whose cultivation should undeniably begin as early as any training can—*patience*—

Set thy heart aright and constantly endure,
And make not haste in time of calamity.

. . . . .

Accept whatsoever is brought upon thee,
And be long-suffering when thou passest into humiliation,
For gold is tried in the fire,
And acceptable men in the furnace of humiliation.

. . . . .

Who did ever put his trust in the LORD, and was ashamed?
Or who did abide in His fear, and was forsaken?
Or who did call upon Him, and He despised him?

. . . . .

Woe unto you that have lost your patience.[1]

The Greek word translated patience, in the last verse, is, more correctly, endurance: the Vulgate reads *sustinentia*.

Though Ben-Sira's advice lacks the glad ring of that pæan on the "end" of the Saints, in the third chapter of the *Book of Wisdom*, yet he drives home a lesson acutely needed by most, and not least by the most devout. He inculcates the truly Christian grace of bearing what is brought on us, the plain, dull duty of turning the dross of daily life into the gold of obedient achievement, not the far more attractive plan of looking about for trials and inventing hardships. He is not like the writer of *Wisdom*, writing of the indescribable glory of the final triumph of the Blessed, but of the purgative, strictly educational path of enduring all the rough, drab, petty difficulties of this world just as they occur; it is the spirit of Thomas à Kempis as he expounds the Royal Way of the Holy Cross, or a manful following on of that rôle described by the fifteenth century writer when he declared—

Though we with wrong to death be brought,
Yet suffering is the one safe way.

The other virtue he would advise, a common accompaniment of a capacity to endure, is industry—

Hate not laborious work,
Neither husbandry, which the Most High hath ordained.[2]

and again

idleness teacheth much mischief,[3]

phrases which remind us of S. Jerome's "idleness—like rust upon the intellect," or S. Benedict's "idleness—an enemy to the soul," conveying to us, under a simple familiar image, the inherent destructiveness of that slack mood so characteristic of the present age, which most of us treat quite lightly, as if it were of no importance in itself. Ben-Sira's remarks on good craftsmen, in the thirty-eighth chapter, turn on the same pivot—industry, attention to the business in hand; and his reference to the futile toils of the dense and incompetent is pathetic indeed—

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[1] *Ecclus.* ii, 2, 4, 5, 10, 14. [2] *Ecclus.* vii, 15. [3] *Ecclus.* xxxiii, 27.

> There is one that toileth and laboureth and maketh haste
> And is so much the more behind.[1]

Not even the unemployable are a modern invention.

There is much in *Ecclesiasticus* to be learned about the tongue, which some have supposed to be S. James' special care. We are warned of the importance and force of speech—

> take good heed to thy lips,[2]

or again

> Curse the whisperer and double-tongued
> For he hath destroyed many that were at peace,
> A third person's tongue hath shaken many ;[3]

or, the injunction about lying, so forcible in the mouth of an Oriental,

> Devise not a lie against thy brother ;
> Neither do the like to a friend.
> Love not to make any manner of lie,
> For the custom thereof is not good ;[4]

or, more vigorously descriptive still—

> The stroke of a whip maketh a mark in the flesh ;
> But the stroke of a tongue will break bones.
> Many have fallen by the edge of the sword :
> Yet not so many as they that have fallen because of the tongue.[5]

If these be the dangers or terrible results of rash talking, what is the right province of speech ?—

> If thou hast right understanding, answer thy neighbour ;
> And if not let thy hand be upon thy mouth,[6]

and again,

> Sum up thy speech, many things in few words ;
> Be as one that knoweth and yet holdeth his tongue.[7]

When we reflect upon our frequent statements which are incapable of substantiation, our judgments on insufficient data, our hypotheses and speculations advanced as certainties, and our empty verbosity, and consider further that such habits, in their germinal state, are not only not corrected, but are often fostered in schools by our unfortunate practice of allowing or requiring children to judge matters quite beyond the grasp of their inexperience of men and affairs, then perhaps we may begin to see the vital connexion between faulty upbringing and sins of the tongue.

> Happy is he that hath not slipped with his tongue.[8]

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[1] *Ecclus.* xi, 11. [2] *Ecclus.* i, 29. [3] *Ecclus.* xxviii, 13. [4] *Ecclus.* vii, 12, 13.
[5] *Ecclus.* xxviii, 17, 18. [6] *Ecclus.* v, 12. [7] *Ecclus.* xxxii, 8. [8] *Ecclus.* xxv, 8.

So rare indeed is wisdom in speech that a cry of pain, crystallizing into a prayer, escapes him, versed as he is in human nature and acquainted with the complexity of life—

Who shall set a watch over my mouth,
And a seal of shrewdness upon my lips,
That I fall not from it, and that my tongue destroy me not?
O LORD, Father and Master of my life
Abandon me not to their counsel,
Suffer me not to fall by them.[1]

He even goes so far as to promise mundane success to those who can govern their tongues—

He that is wise in words shall advance himself.[2]

Of the talkative, he has no more hope than any other wise man ever had—

A man full of tongue is dangerous in his city
And he that is headlong in his speech shall be hated:[3]

but his gravest warning is kept for that ill-thing, gossip—

Never repeat what is told thee,
And thou shalt fare never the worse,
Whether it be of friend or foe, tell it not,
And unless it be a sin to thee, reveal it not.

. . . . .

Hast thou a word, let it die with thee:
Be of good courage, it will not burst thee.[4]

But Ben-Sira realizes that self-control, which is so little regarded in much modern education, is the most fundamental desideratum—

Who will set scourges over my thought
And a discipline of wisdom over mine heart?[5]

The rest of his educational precepts may be divided into those relating respectively to duty to others and to ourselves. The general principle of dealing with others is the obvious universal fact that we share one common lot—

Reproach not a man when he turneth from sin:
Remember that we are all worthy of punishment.
Dishonour not a man in his old age
For some of us also are waxing old.
Rejoice not over one that is dead,
Remember that we die all.[6]

Perhaps only those of us who were actually brought up on absolutely practical suggestions such as these can fully estimate their value as correction at the time, and as suggestion in retrospect.

Ben-Sira laid as much stress as Rabelais and Locke on the importance of companionship: but he was much more brief than the latter.[7] Though he descends to small details of everyday training, even, like the delightful *Babees Boke* of Mediæval England, to the amenities of the table—

[1] *Ecclus.* xxii, 27.
[2] *Ecclus.* xx, 27.
[3] *Ecclus.* ix, 18.
[4] *Ecclus.* xix, 7, 8, 10.
[5] *Ecclus.* xxiii, 2, 3.
[6] *Ecclus.* viii, 5-7.
[7] *Ecclus.* xiii, 1, 15, 16.

Eat as becometh a man those things which are set before thee,
And eat not greedily lest thou be hated.
Be first to leave off for manners' sake;
And be not insatiable lest thou offend.
And if thou sittest among many,
Reach not out thy hand before them,—[1]

yet he is aware that one principle underlies education, that discipline—even to the rod—is the core of the whole.

He that maketh too much of his son shall bind up his wounds;
  And his heart will be troubled at every cry.
An unbroken horse becometh stubborn;
And a son left at large becometh headstrong.[2]

When we look for those loftier human qualities which go so far towards making social life possible, we find a purely Christian view of forgiveness—

Forgive thy neighbour the hurt that he hath done thee;
And then thy sins shall be pardoned when thou prayest.
  Man cherisheth anger against man;
And doth he seek healing from the LORD?
Upon a man like himself he hath no mercy,
And doth he make supplication for his own sins?[3]

Closely allied to some forms of forgiveness is that—shall one venture to say rare—thing, perfect frankness in friendship,

Reprove a friend, it may be he did it not:
And if he did something, that he may do it no more.
Reprove thy neighbour; it may be he said it not:
And if he said it, that he might not say it again.
Reprove a friend, for many times there is slander,
  And trust not every word.
There is one that slippeth, and not from the heart:
And who is he that hath not sinned with his tongue?[4]

These difficult honest steps are just those which most of us refuse even to contemplate. Gossip, so eternally rife, does its deadly work of disunion, and, in our folly and cowardice, we accept its lies as truth: at the best, we hold our tongue and nurse a secret gloomy resentment; at worst, we tell any and every one save the original speaker who alone could put it right. What educator ever dreams of dealing in school with these vital matters, which find a place there as in the big world beyond? Which of us is wise enough to arrive at the right way without some such guidance? Is it not the fact that in our present-day practice, ethical principles, which have stood the wear and tear of ages, are pushed out to make room for psychological hypotheses of the shakiest description?

One hardly knows whether he means the cheerfulness he extols so whole-heartedly,[5] to be an individual comfort or a social grace. It can scarcely exist and not be both. At least it may bridge the passage between duty to others and duty to self. However aware he may be of

[1] *Ecclus.* xxxi, 16-18. [2] *Ecclus.* xxx, 7, 8. [3] *Ecclus.* xxviii, 2-4.
[4] *Ecclus.* xix, 13-16. [5] *Ecclus.* xxx, 20-23.

the individual's duty to the community, he does not rest right on "social sanction," but on "the applause of the Good man's conscience"—

> Blessed is he whose soul doth not condemn him.[1]

When he admonishes us,

> Search not things that are too hard for thee,
> And search not out things that are above thy strength.
> The things that have been commanded thee, think thereupon ;
> For thou hast no need of the things that are secret,[2]

we are reminded irresistibly of Richard Rolle who reckoned among "sins of deed," "beginning a thing that is above our might"; and even more vividly of Thomas à Kempis, "*Multi devotionem perdiderunt dum altiora scrutari voluerunt. Fides a te exigitur et sincera vita, non altitudo intellectus, neque profunditas mysteriorum* DEI."[3]

He desires a man to concentrate his attention and not squander himself in diffuse superficiality.

> My son be not busy about many matters.[4]

Not only, as was said above, does he warn us against those superfluous tasks, those artificial good works for which some of us neglect our obvious diurnal duties, but against all those superfluities which tend to bind us in chains, as civilization lays her hands more and more heavily on the passing generations of men—

> The chief thing for life is water and bread
> And a garment and a house to cover shame,[5]

or again,

> The life of one that laboureth and is contented, shall be made sweet.[6]

All the same, with his usual moderation, he hints not obscurely that happiness is bound up neither with simple poverty nor with wealth, but is found in the heart of him who has learned the supreme lesson of taking things, as they fall out, contentedly—a fact of no small moment to those who are busied in bringing up children—

> With little or with much be well satisfied,[7]

and he teaches a somewhat similar lesson in his quaint exhortation—

> Commend not a man for his beauty
> And abhor not a man for his outward appearance.[8]

He warns us against that exaggerated addiction to our own way which breeds ignorance and narrowness—

> He that hath no experience knoweth few things,
> But he that hath wandered shall increase his skill [9]

Finally and above all he insists on the essentialness to perfection of leisure, of that quiet for reflexion which the bustle and restlessness of modern life seem to be driving ever further from the hearts of men and women—

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[1] *Ecclus.* xiv, 2. [2] *Ecclus.* iii, 21, 22. [3] *De Imit.* iv, xxviii, 2. [4] *Ecclus.* xi, 10. [5] *Ecclus.* xxix, 21 [6] *Ecclus.* xl, 18. [7] *Ecclus.* xxix, 23. [8] *Ecclus.* xi, 2. [9] *Ecclus.* xxxiv, 10.

> The wisdom of the scribe cometh by opportunity of leisure ;
> And he that hath little business shall become wise.[1]

As according to an old, homely proverb, the "proof of the pudding is in the eating," so the test of an educational theory is the human being produced by it, which makes Émile, e.g., *damnosam hœreditatem* to the disciple of Rousseau. Ben-Sira was no schoolmaster ; we can only seek his ideal of what men and women should or should not be. He waxes vehement over the horror and noxiousness of a bad woman—

> Give me any plague but the plague of the heart ;
> And any wickedness but the wickedness of a woman.
>
> . . . . .
>
> I had rather dwell with a lion and a dragon,
> Than keep house with a wicked woman.
>
> . . . . .
>
> All malice is but little to the malice of a woman.[2]

These are strong words indeed, and we may think it an idle task to attempt, even with the help of history to decide whether a man or woman is most successful in the hateful competition of achieving sin. Ben-Sira certainly knew the worth of a good woman—

> As the sun when it ariseth in the highest places of the LORD,
> So is the beauty of a good wife in the ordering of a man's house.[3]

The MS. which substitutes *her house* for a *man's house*, may comfort those who feel injured at this domestic inferiority ; but they will not be consoled by the test of a good man, based on the old division of a man to think, a woman to keep house—

> Praise no man before thou hearest him reason ;
> For this is the trial of men.[4]

However, the wise historian of pedagogy will not grumble at individual views. As he ranges over the different ages and regions of human history, he will travel with a fan in his hand. Not all things are for all persons : one place has this custom, another that ; times change and we with them. But it must be a dull fellow indeed who can read Ben-Sira and find in him no correction for his own faults, no assistance in his dealings with those committed to his charge.

As the teacher wanders at will amidst these Sapiential Books, with their intuitional standpoint, their unshaken regard for authority combined with their penetrating analysis of the actual facts of men and things, he can but wonder again and again why they have been allowed to fall into comparative oblivion and disregard.

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[1] *Ecclus.* xxxviii, 24.
[2] *Ecclus.* xxv, 13, 16, 19.
[3] *Ecclus.* xxvi, 16.
[4] *Ecclus.* xxvii, 7.

IMAGERY IN IMAGINATIVE LITERATURE.

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THE object of the series of experiments to be described in this paper is threefold. In the first place it is attempted to obtain some idea as to what proportion of a class of boys may be supposed to have images of different types, and to what extent these images function when the class is dealing with imaginative literature. Next, the question will be discussed: "Does the imagery aroused in the pupil's mind by a piece of imaginative literature aid or hinder, or in no way affect the understanding of that piece of literature?" Lastly, we shall briefly consider whether the use of imagery by the teacher is profitable or no, and, supposing the answer to be in the affirmative, how he can best secure that the pupils' imagery shall function as he wishes. These questions may be taken in order.

I.

In the first series of experiments five classes, each containing six boys, were subjected to the same experiments under conditions as nearly as possible identical. The following is a summary of the essential points of difference between these classes:

CLASS I consisted of boys in the Sixth Form of a second-grade Secondary School. Their average age at the time was seventeen years, six months. The four eldest boys were specializing, one in modern languages (C), one in history (F), and two in science (D and E). The intellectual standard of the class was rather above the average.

CLASS II was taken from the same school. Its average age was fifteen; its intellectual standard above the average.

CLASS III consisted of boys of the same average age, but rather duller, and with less power of self-expression on paper. Their average age was also fifteen.

CLASS IV was made up of pupils specially chosen from the ex-seventh standard of a Higher Grade School on account of their general proficiency. Their average age was only thirteen, but apart from their powers of imagery, they were superior to Class III in their ability to set down what they experienced.

CLASS V was chosen from the Upper Second Form of a First Grade Secondary School. It averaged the age of thirteen, but in intellectual capacity was below the usual standard of the form. The English teaching, however, at this school is exceptionally good, and most of the smaller boys are able to write more freely than other boys of the same age.

EXPERIMENT I.—The first part of this experiment consisted in a number of short individual tests for the chief types of imagery (visual, auditory, olfactory, and motor), the second part in a preliminary test as to the value of the imagery in literature.

The preliminary explanations were made as simply as possible. Visual imagery ("seeing with the mind's eye") was first mentioned, followed by auditory, olfactory and motor imagery in that order. The examples used were a heath or field (according to the locality of the school), the wind in winter whistling round a house, a sulphuretted hydrogen apparatus, the street on a hot day after a short shower of rain, and the starting for a race. The class in each case was encouraged to suggest other examples. Individuals were then tested in the following ways:

For *Visual* Imagery with "the classroom they had just left," or "their breakfast table that morning."

For *Auditory* Imagery with "an express train in motion."

For *Olfactory* and *Motor* Imagery with "the descent in a lift to a Tube Station," "roses and violets," "starting for a journey in a motor 'bus."

Each boy was tested as carefully as possible, and the results were recorded in four classes: Weak, Medium, Strong, Very Strong. The detailed results will be found in the appended tables. A summary, however, may here be given.

Of the thirty boys tested, one was an exceptionally good visile, eight were classed as strong, nineteen as medium, and only two as weak. Every one possessed "colour-imagery," and in nearly every case the images had considerable flexibility.

Twenty-eight of the thirty boys were audiles. One only (a rather deaf boy of thirteen) was marked "very strong," two others were decidedly "strong," twenty were "medium," and five "weak." In addition, twenty-three boys had olfactory images (fifteen being classed as weak, and eight as "medium"), and twenty-two were motiles, two strongly so, twelve moderately, and eight only slightly.

The boys were now told to listen very carefully to a few lines which would be read to them slowly and with expression, but only once. The lines were as follows:—

"Like the noise of chariots on the tops of mountains shall they leap, like the noise of a flame of fire that devoureth the straw, as a strong people set in battle array"; (*Joel* ii, 5: "Straw" was substituted for the "stubble" of the original, as being a word more likely to come within a boy's experience).

Thirty seconds were allowed to elapse and the class was then told to write in full all the images which they had experienced during or since the reading of the passage. The results of this experiment are appended. Unfortunately, time being limited with Class I, this passage was not read, and only two of the boys were able to stay behind after the lesson to undergo this test.

EXPERIMENT I.—CLASS I.

Subject	Visual	Auditory	Olfactory	Motor	Result of Reading Passage (Introspection of Subject).
A 16·1	Medium	Strong	Weak	...	The experimenter was unable to test these subjects with the passage for reasons of time.
B 16·11	Strong	Medium	Weak	...	
C 17·7	Strong	Strong	Weak	...	
D 17·8	Strong	Medium	Weak	Strong	
E 18·2	Medium	Medium	...	...	Saw "flaming chariots" and "the steep." Heard "the noise of a people."
F 19·0	Medium	Medium	...	...	Saw "chariots rushing over a mountain side covered with more or less large boulders." Heard noise of roaring flame and clang of "battle array."

EXPERIMENT I.—CLASS II.

A 12·10	Weak	...	Weak	Weak	"Saw the mountain high up and a rocky road, and a chariot going over a steep cliff." Felt a "funny sensation." "Smelt straw."
B 13·11	Medium	Weak	Weak	Weak	"Saw fiery horses, and a lot of men like ancient Britons," "Heard rumbling noise." "Had smell of sulphur."
C 14·4	Medium	Medium	...	Weak	"Saw the chariots on the mountain-top; saw the flames and heard the roaring noise; saw the people in battle array with spears, &c." Heard "murmuring" and "thundering." "Felt the shaking."
D 15·4	Medium	Medium	Weak	Medium	"Saw chariots jolting; smelt burning straw and heard it crackle; also saw smoke from straw."
E 16·7	Weak	Weak	Weak	Weak	"Heard and saw flames devouring hay, and saw line of people in battle array."
F 16·9	Medium	Medium	...	Medium	"Saw a burning haystack," and heard "a clatter of hoofs."

EXPERIMENT I.—CLASS III.

Subject	Visual	Auditory	Olfactory	Motor	Result of Reading Passage (Introspection of Subject).
A 14·2	Medium	Weak	Weak	Weak	"Saw the people in battle array," and "mountains." Heard a "noise by the commander."
B 14·3	Medium	Medium	Medium	Weak	"Saw army of chariots charging over rough ground, some straw, and a *shed* on fire."
C 14·6	Strong	Medium	Medium	Medium	"Heard and saw a flame burning straw, and heard the flame flickering and a chariot bounding along."
D 15·0	Medium	...	Medium	Weak	"Smelt burning straw." Saw "mountains" and "chariots jumping on the top."
E 15·7	Medium	Weak	...	Weak	"Saw a chariot rather faintly."
F 15·10	Medium	Weak	...	Weak	"Heard the roar of the flames."

EXPERIMENT I.—CLASS IV.

A 12·6	Medium	Medium	Weak	...	Saw "fire and people in battle array rejoicing because they have triumphed over their enemies." Heard "rumble of wheels."
B 12·9	Medium	Medium	Weak	Strong	"Saw the fire destroying the straw, and felt the wind on the top of the mountains." Also "saw the battle in array."
C 12·11	Medium	Medium	Weak	Medium	"Saw chariots swaying about with tricky horses, on a mountain"; heard "the roar of a fire," "smelt the fire and felt the sparks."
D 13·2	Strong	Medium	Medium	Medium	"Saw flames in the straw, a dust, chariots." "Felt as if I was in one, rocking and bumping." "Saw them leap over mountain edge."
E 13·2	Medium	Medium	Weak	Medium	"Saw a large army in battle array, chariots descending a mountain at a great speed." "I felt the wind upon me when the chariots passed."
F 13·3	Strong	Medium	Medium	...	"Saw a great red flame and a heap of straw half black and in ashes, and the other on top with smoke coming through it. Also I heard the roar which came like the waves."

EXPERIMENT I.—CLASS V.

Subject	Visual	Auditory	Olfactory	Motor	Result of Reading Passage (Introspection of Subject)
A 12·2	Very strong	Medium	Weak	...	"I can see a chariot and its own charioteer charging over stones. I can hear the crumpling of the stones and I can see the charioteer leaning forward and lifting up his arm, in which is the whip. He is striking the horses with it. I can hear the crash of it long after, and I can see the horses charge forward again, and then I can see the charioteer draw in the reins and pull the horses up."
B 12·3	Medium	Very strong	Medium	Weak	"I can hear distinctly the rumble of the chariots, the champing of the horses' bits, the clink of the harness, the cracking of the whips, and the shouting of the men."
C 13·1	Strong	Medium	...	Medium	"I heard the terrific noise of the chariots, and saw them leap. I saw them *rushing* through the air as they leapt. I could feel the vibration of the chariots. I saw the army drawn up ready to fight. I heard the shouts of the warriors."
D 13·5	Medium	Medium	Weak	Medium	Saw "lightning behind the chariot, glittering of chariot." Also "glittering of swords, and heard swords entangling." Heard "the wheels of the chariot going 'thud, thud.'" Felt "thud of chariot on stones, and horses galloping."
E 13·6	Strong	Medium	Medium	Weak	"I can see a chariot race. I can hear the noise of the horses, I can smell the dust. I can see a fire, I can hear the falling of bricks, the people shouting. I can feel the thudding of the bricks as they fall."
F 13·7	Medium	Medium	Medium	Weak	"Heard noise of chariots and horses' feet, see them pass by very dimly against the sky, feel that they will be down on you in a minute, hear the din of the battle and the fire crackling as it burns the straw, smell blood of dead men and the smoke rising from the fire."

What may we infer from the results of this experiment? Let us first clear away an initial difficulty which otherwise may hinder us throughout the whole series.

It will be said that such results as these must be untrustworthy because of the difficulty of the introspection involved, a difficulty which, great in any case, is rendered doubly so in these tests by the pupil's desire to put down what he thinks will satisfy or please the experimenter.

The initial disadvantage must be admitted, though it is doubtful whether it is any greater with children than with adults, but the second objection cannot be allowed; no such desire seemed to be evinced, perhaps because the objection was anticipated and the exact nature of the work which was wanted carefully explained to each class. It was made clear, for example, that to be wanting in any type of imagery is not to be wanting in one of the senses, but only to receive impressions in certain ways rather than in certain other ways. The experimenter himself confessed his deficiency in one type of imagery, and the boys showed no hesitation, where necessary, in doing the same. The work was also done as informally as possible, and not made to resemble a school exercise. Questions were addressed to individual boys upon what they were writing; these could not all be transcribed, but their general tendency was to show that the images recorded were really received.

The most striking feature of these results is the extraordinary richness of imagery which they reveal. That, out of thirty boys, of ages varying from twelve to nineteen, chosen from three distinct grades of school, and representing quite distinct social surroundings and methods of education, not a single one was found without visual imagery is surely in itself a fact worthy of record. But that all except two of these boys should be audiles, all except eight motiles, and all except seven olfactives, reveals a condition undreamt of (or, at any rate, a condition *not utilised*) by the average teacher. Exactly one-half of these boys had, in some degree, each of those four types of imagery. One wonders what use they make of them in their literary studies.

The remainder of the experiment should help us partly to decide. The verse from *Joel* was particularly chosen because it combined all four types of imagery, so that a pupil with reasonably strong powers of imagery might be expected to receive four distinct kinds of impression. As a matter of fact, nearly all the boys were weak in at least one type, and only in some eight or nine boys were weak images found to function with respect to the passage read. But the general rule was that both "strong" and "medium" boys had images as powerful—often indeed more powerful—in the second part of the experiment as in the first, a fact which will be borne out by a cursory glance at the tables just given. Hence, under certain conditions at least, imagery will function in imaginative literature, even at the age of twelve.

But it should be observed that from this point onward one special type of imagery predominates—the visual. Of the twenty-eight audiles as tested by common objects, only twenty-one recorded auditory images in the first piece of literature read to them, while only two boys (and these exceptional ones) received no visual image. The decline is even more marked with the olfactory and motor boys. Nineteen olfactives heard the passage from *Joel*, yet only seven recorded olfactory images. Of eighteen motiles to whom the lines were read, only eight recorded motor images. So apparently the teacher must reckon more on visual imagery than on imagery of other kinds with even the simplest form of imaginative literature.

For the passage read was certainly calculated to arouse the boys' imagery, both from its very nature and because it followed almost directly some questions which the boys knew or guessed were set to test their imagery. And this in spite of the fact that the boys were told to listen carefully for the purpose not of picturing but of understanding what they would hear. In the next two experiments we shall be dealing with imaginative literature read under conditions far more nearly resembling those of the actual school.

Before passing on we must note that this experiment affords little or no justification to the view that strength of imagery is most marked, within school limits, in the youngest children, and is least prominent in the higher classes. The proportion of strong imagery in the various classes of these experiments is as follows:

Class I - - 25%
Class II - - 0%
Class III - - 4·2%
Class IV - - 12·5%
Class V - - 16·7%
(two "very strong.")

The fluctuation suggests that in the process of school life, at least, little of the child's imagery has been lost. But it would, of course, be necessary to conduct investigations on a much wider scale before one could defend this view.

EXPERIMENT II.—The Class was now told to listen attentively to part of a poem which would be read through to them, and which, it was said, was not altogether easy to understand. The title, "A Sea Spell," was given to them, and the theme—that of a siren luring mariners to destruction—explained in a few words. Most of the boys were already acquainted with stories about the siren, and found no difficulty in understanding what was meant by the word. The following extract was then read as expressively as possible:

> "Her lute hangs shadowed in the apple-tree,
> While flashing fingers weave the sweet-strung spell
> Between its chords; and as the wild notes swell,
> The sea-bird for those branches leaves the sea.
> But to what sound her listening ear stoops she?
> What netherworld gulf-whispers doth she hear
> In answering echoes from what planisphere,
> Along the wind, along the estuary?"
>
> [From "A Sea Spell," by *Dante Gabriel Rossetti*.]

After fifteen seconds had elapsed the boys were asked to write down whether they had grasped the sense of any part of this poem and, if so, of how much. When this was done, they were told to write down in full any images which they had received. The results are tabulated below. From the first three columns the general nature of each subject's imagery may be gathered, the fourth column shows how far the boys understood the lines read to them, and the last column the extent to which their imagery functioned with respect to this piece of literature.

EXPERIMENT II.—CLASS I.

Subject.	Imagery as tested by (i) Direct Questions. (Experiment I.)	(ii) Reading of passage*	Answers to the Question: "Did you grasp the sense of these lines?"	RESULT OF READING THE PASSAGE. (Introspection of Subject.)
A	A—Str. ... V—Med. ... O—Wk. ...	...	Yes, partly	"Heard the lute." "Saw the bird; saw the tree and the estuary.*
B	V—Str. ... A—Med. ... O—Wk. ...	...	Yes	"Saw the blossom on the apple tree." "Heard the harp." Also had "pictures of the sea-birds flying to the sea; a bright blue sky; a lady with long fair hair playing."
C	**V**—Str. ... A—Str. ... O—Wk. ...	...	Partly	"*Heard* the lute, the seagull departing and the wind [*sic*]. Saw the player and the lute, the seagull and the apple tree. Also felt the fingers going over the strings."
D	V,M—Str. ... A—Med. ... O—Wk. ...	...	Yes	"Saw a beautiful dark-eyed woman of about 25, dressed in a close-fitting white robe. She is bending forward, listening while she plays a harp." "Sea in background, and apple tree and garden in foreground."
E	V,A—Med. ...	V 2, A 1 ...	Not quite all ...	"Saw the apple tree and the graceful sweep of the fingers, the beach, the birds. Heard the sound of the lyre. *Smelt* the sea and the orchard."
F	V,A—Med. ...	A 2, V 1 ...	Not quite all ...	"Saw apple tree, figure playing instrument and listening. Gull enticed from sea. Heard roar of sea, notes of harp." "Vague feeling of expectant listening."

* The numbers given are those of the images received: A=Auditory, M=Motor, O=Olfactory, V=Visual. Similarly with the following experiments.

EXPERIMENT II.—CLASS II.

Subject	Imagery as tested by (Experiment I.)		Answers to the Question: "Did you grasp the sense of these lines?"	RESULT OF READING THE PASSAGE. (Introspection of Subject).
	(i) Direct Questions	(ii) Reading of passage		
A	V, M, O—Wk.	V 3, M 1, O 1	Not all	"Saw birds flying inland over boulders, smelt the sea, and saw a sky full of stars."
B	V—Med. A, O, M—Wk.	V 2, A 1, O 1	Yes	"Saw great waves crashing against the side of a boat; while the ship is being drawn towards the men (they?) are trying to keep her nose away."
C	V, A—Med. M—Wk.	V 3, A 2, M 1	All but last two lines	"Saw *sirens* and apple-trees in bloom—the lute and the fingers playing it; saw the sea-birds flying to the trees—saw the estuary."
D	V, A, M—Med. O—Wk.	V 2, A 1, O 1	All but last two lines	"Heard the sea-bird shriek; saw the lute hanging in the shade. Also saw the apples on the tree and the siren very clearly'"
E	V, A, M, O—Wk.	V 2, A 1	Not all	"Saw and heard the water, and also heard some singing."
F	V, A, M—Med.	V 1, A 1	Yes	"A girl on a rocky eminence overlooking a broad river; gulls flying over the water; an apple tree at sunset. The maiden is in a listening attitude, lightly touches her lyre, which she poises on her knee."

EXPERIMENT II—CLASS III.

A	V—Med. A, M, O—Wk.	V 2, A 1	Not quite	Nothing.
B	V, A, O—Med. M—Wk.	V 3	Yes	"Heard the sound of the sea rushing on the rocks."
C	V—Str. A, M, O—Med.	V 2, A 2	Yes, all but the end part	"Saw the bird and the harp, and an old gnarled apple tree."
D	V, O—Med. M—Wk.	V 2, O 1	Fairly well	"Saw a fairy-like person playing a lute."
E	V—Med. A, M—Wk.	V 1	Fairly well	"Saw a boat and heard some echoes."
F	V—Med. A, M—Wk.	A 1	Not quite	Saw "sea birds flying to land."

EXPERIMENT II.—CLASS IV.

Subject	Imagery as tested by (i) Direct Questions (Experiment I.)	Imagery as tested by (ii) Reading of passage	Answers to the Question: "Did you grasp the sense of these lines?"	RESULT OF READING THE PASSAGE (Introspection of Subject).
A	V, A—Med. ... O—Wk. ...	V 2, A 1 ...	All except the last two lines.	Saw "a cliff by the sea, an apple tree with a harp hanging up. Woman playing beautiful music. Sea birds flying to hear the music."
B	V, A—Med. ... O—Wk. ... M—Str. ...	V 2, M 1 ...	Gave general sense in a short paraphrase.	Saw "siren waving her fingers over the lute beside the sea." Heard "roar of sea" . . . "the echo of the music running up the narrow estuary."
C	V, A, M—Med. O—Wk. ...	V 2, A 1 ... M 1, O 1 ...	Gave general sense in a short paraphrase.	"Saw the siren on a seat *under* the apple tree. She was very beautiful, and was playing music on the lute of gold." "I smelt the apples and flowers, a very mixed scent." "I heard the enchanting music, and the birds' songs."
D	V—Str. ... A, M, O—Med...	V 4, M 1 ...	All except one line.	"Saw a lady in a tree with apples on, playing a lute; people flocking around her, and sea birds coming from the sea."
E	V, A, M—Med. O—Wk. ...	V 2, M 1 ...	All except the last two lines.	Saw the siren "sitting on a rock in solitude . . . a few sea birds gliding on the water. As she plays the birds perch themselves on the trees." Heard "sound of waves and lute." "I have the seaside smell."
F	V—Str. ... A,O—Med. ...	V 3, A 1 ...	The first few lines ...	"Saw the great cliffs with the lady sitting, with her legs crossed, and an apple tree in full bloom growing just behind her, with her lute hanging on the branches. A sea bird was resting on the waves. I heard the waves splashing on the shore and the hiss of the wind among the caverns."

EXPERIMENT II.—CLASS V.

Subject	Imagery as tested by		Answers to the Question: "Did you grasp the sense of these lines?"	RESULT OF READING THE PASSAGE.
	(i) Direct Questions (Experiment I.)	(ii) Reading of passage		Introspection of Subject.
A	V—V.Str. ... A—Med. ... O—Wk. ...	V 7, A 2 ...	Understood the sense but not all the words	"I could see a wicked but beautiful woman, with a lyre in her hand, playing on it very gently, as if by magic; and I can see a wicked gleam in her eyes, as she waits for her prey. And a sea-bird hearing the song springs up, and is looking about her, to find out where the music comes from."
B	A—V.Str ... V, O—Med. ... M—Wk. ...	A 5	Yes	"Heard the low, sweet voice of the siren, the lapping of the waves on the shore, and the swish of foam, and the sizzling sound as the waves creep over the sand." Also saw a dim picture."
C	V—Str. ... A—Med. ... M—Med. ...	V 3, A 2, M 1	I understood the general sense, except a few words	"I saw the *flute* on the tree. I felt a sort of vibration in the air as the notes went out. I heard the song and saw the fingers weaving fast. I heard the sound of splashing oars, as a boat came near land. I saw the siren seated on the island."
D	V, A, M—Med... O—Wk. ...	V 2, A 2, M 1	Most of it	"Heard sound of waves; felt thud of waves against the shore rolling up to the stones and going back. Smelt the seaweed. Saw waves dashing up and gulls flying overhead, and the lady walking along alone seeking for a place to sit on."
E	V—Str. ... A, O—Med. ... M—Wk. ...	V 2, A 3 ... M 1, O 1 ...	Yes, the general sense but not all the words	"Saw mermaid sitting on a rock, and playing the harp with her hand. I can hear the singing and music of the mermaid, and the waves dashing on the rock. I don't smell anything but the sea."
F	V, A, O—Med... M—Wk. ...	V 1, A 2, M 1 O 2	Except beginning and end	"Hear the rolling of the sea, and the breeze moving the branches, and the birds' wings as they fly. See the country, with trees and grass."

It will be seen that we are here dealing with literature under the conditions of the classroom. The lines are such as the boys may hear (and should hear) during an English lesson. True, their imagery is still particularly active as a result of the preceding tests, but it might be made equally active by any good teacher who has himself strong, or even moderate, powers of imagery. So we are now in a position to make legitimate inferences from this experiment as to the question under consideration. These may be grouped under four headings:

I. The visual element now predominates in a marked degree. Twenty-eight of the thirty boys now receive visual images, while auditory images are aroused only in seventeen. Olfactory images are received only by seven boys, and motor images by four. These figures should be compared with those similarly compiled from the previous experiment. Hence it may be stated with safety that, except in literature which is especially calculated to arouse the minor types of imagery, the teacher must depend almost entirely on the visual type, which seems to be almost always present in children.

II. Further, now that they are let loose in the broad plains of literature, the boys' imagery is more varied and freer than before. They see pictures in detail which is in no way conveyed by the poem; their imagery is creative. The "sea-birds" of B in Class I are perversely enough flying across the land *towards* the sea and not *from* it; C in Class II sees many women, and not merely one; D in Class I describes his siren in detail, and A in Class V sees "a wicked gleam in her eyes," and a "sea-bird hearing the song" springing up and looking round to see "where the music comes from!" The imagery of a few boys is almost entirely creative, and not at all of the kind one would expect from the poem. F in Class V, for example, sees and hears not a single one of the conventional sights and sounds which distinguish most of the other writers—I have made considerable use of this creative imagery in teaching English Composition to lower classes, and with very satisfactory results. My own experience would seem to indicate that it is stronger with younger boys than with older, though this fact is not borne out by the present experiment.

III. The question of the variation of imagery in boys of different ages may now be again considered. The absence of four boys from Class I during the latter part of the first experiment throws us on to the second experiment for data. And there it seems clear that though the strongest powers of imagery were more noticeable in the top class, there were more varied images (which also functioned much more readily during the reading of the poetry) with the younger boys. The following summary of results will be the best way of proving this.

Class	Total Number of Images of all types [Strong in brackets.]	Total Number of Images of all types aroused by the given passage.
I 17·6	17 [6]	32
II 15·0	21 [0]	23
III 15·0	21 [1]	8
IV 13·0	22 [3]	28
V 13·0	22 [4]	34

The comparison is noteworthy, though it must not be forgotten that the eldest boys are naturally able to express themselves better than the others, with the possible exception of Class V, as explained at the beginning of this paper.

IV. There remains still the difficult question of the relative function values of strong and of weak imagery. With every kind of imagery except the visual, the tendency, as has been seen, was for the function value to decline, leaving the visual imagery master of the field. We have then only to consider this remaining type.

It will be seen from the above tables that the boys with the strongest visual imagery have nearly always added, in the pictures they have mentally seen, certain details of their own, but that this characteristic is also found in certain boys who have images of but medium strength. It is obviously to such boys that the free use of imagery, both by the teacher and by themselves, will be of the greatest value. However, the advantage to the teacher, supposing it always to be real and practical, would be seriously curtailed if it involved inaction on the part of any considerable proportion of the class. In other words, it is only if the weak visualisers can receive images from the literature under consideration that we can allow a deliberate choice of literature to be justifiable.

The most we can infer under this head from the second experiment is information of a negative kind. The worst results came from Class III, which contained not a single boy whose imagery as tested by common objects was classed as weak, but which was nevertheless made up of boys who were intellectually rather poor. The only case, from the whole five classes, of inability to receive any imagery, came from this class, and as regards both this and the next experiment, the results would hardly justify the use of such literature in class. Yet, judging from the actual text of the replies received, it would seem that the failure is largely a failure to *write down* the images aroused, and chance questions during the experiment confirmed this view. Of those two subjects, out of the five classes, who were found to be visually weak when tested, both received visual images in this experiment, and both were very much helped by the explanations given in the next experiment, which aroused three or four fresh visual images in each case.

Summing up under this head, my own view is that if a large proportion (say 25%) of the class was found to be as incapable of receiving images as the worst boys in the class just mentioned it would not be worth the teacher's while to make use of imagery to any extent. But a more likely proportion would appear to be from 10% downwards, and since in practically every case *some* result was recorded and more might often have been gained by careful questioning, such a small proportion may be neglected in the interests of the whole.

(To be continued.)

"GRADING BY MENTAL TESTS."

By W. VICKERS, M.Sc., and STANLEY WYATT, M.Sc.

I.—Introduction.

THE following investigation arose from a challenge to grade scholars who desired to be admitted into school, in the class suitable to their ability, without either seeing them or knowing anything about them beyond their responses to the tests we should devise and which should be applied by another person. On the basis of previous tests not specially designed for this purpose, eight children were so tested. Six were correctly graded and two were refused admission to the school. As regards the six, the positions they would occupy in the following term examinations were successfully predicted. It was thought that the work would be worth extending in order that more nearly perfect tests might be devised, which would be of assistance to head masters, who wish to make a rapid and accurate estimation of the mental ability of the children who apply for admission to their schools. Such tests would serve as a basis for grading the new scholar in the class suited to his intelligence.

The usual procedure when a child presents himself for admission into a school is to ask him which standard or form he was in at his last school, to test him in reading, spelling, and arithmetic, and to take into account his age and the general impression he creates. Sometimes a written test is given. When a large number of scholars are being admitted, the above examination (which takes up much more time than the following mental tests) is naturally more limited and more hurried. The scholar is then temporarily allotted to a certain class, and after a week or so the teacher or form master judges whether the child is in the class which is suited to his level of intelligence. The method is crude and haphazard, and consequently mistakes are frequently made. Recently, at a well-known school in Manchester, one boy was placed two forms too low because he was judged according to a standard of definite knowledge and amount of technical information rather than by a standard of general intelligence, and the mistake was only rectified on protest and after much waste of time. In the great majority of cases a new scholar should be judged by his general intelligence and not by the quantity of special knowledge he possesses. When the curricula of various schools differ so much from one another, it is obviously unfair to grade a child who is changing from one school to another according to his stock of definite information and forms of skill, since his suitability to a class depends not upon this information and skill, but upon his adaptability to new situations, that is, upon his general intelligence. If a newly-admitted child is equal to or above the average general ability of the class, he will soon pick up the necessary special knowledge which the other children have already acquired. Only in such cases in which the forms are rearranged for each subject of the curriculum would it be permissible to grade a child according to his store of special knowledge in that subject, and even in these cases not exclusively so.

Specially selected mental tests then, would thus seem to be superior to the usual haphazard methods of classification since they lend themselves to exact numerical measurement, are more definite, accurate, speedy, and reliable, are more easily applied, and afford a measure of a child's general ability rather than his special knowledge.

II.—Aims of the Investigation.

The aims of the investigation were :—

1. To select the most suitable types of tests which would serve as a means of classifying children of various ages in the order of their intelligence.
2. To devise such tests of the types selected and also a system of marking, so that the difference between the means of any two classes should be greater than the average deviation from these means.
3. To standardize such tests.
4. To allot marks to each test in proportion as it correlates with General Intelligence.

III.—Selection of the Tests.

The most suitable types of tests will be those—

(*a*) which correlate most highly with General Intelligence;
(*b*) which can be set to scholars of widely different ages;
(*c*) which can be set to any number of children at the same time;
(*d*) which minimize the difficulties of procedure by the avoidance of special apparatus;
(*e*) which test general ability in contradistinction to special knowledge;
(*f*) which can be easily and quickly applied; and
(*g*) which yield reliable results.

Previous investigators have found that the tests which give the highest correlations with the subjective estimations of intelligence are the Analogies, Completion and Hard Opposites tests. In Table I will be found the correlation coefficients of these tests with their respective Intelligence Classification.

TABLE I.

Test.	Burt and Moore[1]	Brown[2]	Wyatt[3]
Analogies ...	·50	—	·80[4] ·62
Completion ...	·64	·43[4] ·69	·85 ·61
Opposites ...	·62	—	—

Since these tests also fulfil the other conditions mentioned above, they were selected as the types to be used in the present investigation. Improvements were introduced whenever possible. Examples according to each type of test were then constructed of varying degrees of difficulty, and arranged so that the easier examples came early in the series.

IV.—The Subjects.

The subjects of the investigation consisted of 78 children of both sexes attending the Fielden Demonstration School, Manchester. Their ages ranged from 9 to 15 years, and for teaching purposes they are divided into five classes (IV, V, VI, VII, and VIII). In social status they are slightly superior to the average scholar of the elementary school. The children have often been the subjects of psychological investigations, and hence no undue excitement was shown during the application of the tests. The whole procedure was undisturbed by any irrelevant factors, and consequently the results are all the more reliable.

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[1] *The Mental Differences between the Sexes.* This Journal, I.5. p. 375.
[2] *The Essentials of Mental Measurement.* Cambridge, 1911. pp. 114 and 116.
[3] *The Quantitative Investigation of Higher Mental Processes.* Brit. J. of Psych., 1913. VI. p. 128.
[4] The upper and lower lines of Brown's results represent his Groups II and III respectively. Similar representation of the results by one of us indicates Groups I and II respectively.

V.—The Tests Selected.

1. ANALOGIES.[1]

In this test three terms are given, and the problem is to find a fourth term bearing the same relation to the third term that the second bears to the first.

e.g.s.

(1) White : Black :: Light :
(2) Needle : Sewing :: Scissors :
(3) Ice : Hard :: Butter :
(4) Wet : Moist :: Moist :
(5) Health : Strength :: Illness :

Thus the process is closely allied to the familiar method of proportional parts in arithmetic, the only difference is that ideas are used instead of numbers.[2]

2. OPPOSITES.[3]

This test consists of a list of familiar words, and the children were asked to write a word opposite in meaning to each of the words given.

e.g.s.

(1) Empty .
(2) Late .
(3) Cruel .
(4) Peace .
(5) Destroy .

3. COMPLETION OF SENTENCES.

Instead of the usual "Completion Test," which consists of a narrative from which certain words are omitted, a series of unrelated sentences was here used. One word was omitted from each sentence, and the children were requested to complete the sentence by supplying the omission.

e.g.s.

(1) Much was done by the great fire.
(2) I like better than autumn because it is warmer.
(3) I was so I went to bed.
(4) The pudding is too sweet; you put too sugar in it.
(5) is expensive to a man with a good appetite.

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[1] It is possible to construct examples of various types such as:—

Opposites, e.g., High : Low :: Long :
Part-Wholes, e.g., Branch : Tree :: Arm :
Thing-attribute, e.g., Grass : Green :: Snow :
Degree, e.g,, Wave : Ripple :: Town :
Agent-function, e.g., Bell : Ringing :: Gun :
Species-genius, e.g., Sword : Steel :: Boot :
Cause-effect, e.g., Hit : Cry :: Poison :
Sequence, e.g., Spring : Autumn :: Dawn :
Action-medium, e.g., Swimming : Water :: Flying
Motive, e.g., Self-respect : Vanity :: Considerate :
Object-environment, e.g., Fish : Sea :: Scholar :
Agent-" tool," e.g., Writer : Pen :: Jockey :
Status, e.g., General : Army :: Teacher :
Agent-product, e.g., Bees : Honey :: Baker :

&c. In most of the above types of analogy the terms can also be inverted.

[2] W. H. Winch, in *Should young children be taught Arithmetical Proportion?* this Journal, 1913, Vol. II, has shown that even children of the age of seven years are able to perceive relationships, especially when they do not involve definite numerical values.

[3] Roget's "Thesaurus" (Everyman's Series, Nos. 630 and 631) will be found helpful in devising these tests.

Often a careful study of the context was necessary before the relevant word could be supplied, and in the case of the younger children the replies were seldom automatic.

VI.—Method of Application.

Each entire test consisted of fifty examples. The Analogies and Sentence Completion tests were each divided into two equal parts, and given as two separate tests. These will be referred to as Analogies I, Analogies II, Sentence Completion I, and Sentence Completion II, respectively. Since the original series for each test was arranged in increasing order of difficulty, Part I of each test was easier than Part II. The fifty words which consitituted the Opposites test were given as one complete series. The method of application was the same in each case. The test about to be given was explained to the children in each case by means of five examples (quoted above). Type-written papers of the test were then given out face downwards, and the children asked to write their names on the back. At a given signal the children turned them over and began the test. At a second signal the papers were again turned over and then collected. The tests were given in the following order :—Analogies I (2 mins.), Analogies II (3 mins.), Opposites (5 mins.), Sentence Completion I (2 mins.), Sentence Completion II (3 mins.). These times were insufficient for any scholar to complete the test. Five weeks later a second series of similarly-devised tests was given under similar conditions. These will be referred to as Analogies III and IV, Opposites II, and Sentence Completion III and IV, respectively. An indication of the reliability of the performances could then be obtained by correlating the results of the two series of tests (See Table III).

VII.—System of Marking.

A uniform system of marking was adopted throughout. Each answer correctly given was awarded 2 marks, and 1, 0, or −1 marks were given for other answers according to the extent of their deviation from the correct reply. Only one mark was deducted for a totally incorrect reply, since time was lost by the subject in attempting the solution of the example. Marks were not deducted for inability to solve any particular example.

Since each test gives approximately the same correlation with the Intelligence Classification, and the Means of the different tests vary only slightly, the total marks were obtained by simply adding together the results of the separate tests (See Table II below).

VIII.—Treatment of the Results.

Since the two classes, VII and VIII, consisted of eight and ten scholars respectively, they were treated as one group, thus making four groups in all.

The results of the first series of tests were amalgamated with the results of the corresponding tests of the second series, and the Means and Average Deviation of this amalgamated series were evaluated. In addition similar values were obtained for the entire Analogies and the entire Sentence Completion tests. These results are given in Table II.

The Reliability Coefficients were obtained by finding the correlation between the corresponding results of each type of test in the first and second series.

Two classifications according to the order of the scholars' intelligence were obtained for each class from the Mathematics and Humanities teachers respectively. These classifications were based upon the teacher's impression of the scholars' general intelligence (which was defined as the power of adaptability to new situations), and not upon the class lists. The two classifications[1] for each group were then amalgamated and used for the evaluation of the correlation with General Intelligence. In every case the rank formula[2]

$$\rho = 1 - \frac{6 \Sigma (d^2)}{N (N^2 - 1)}$$

was employed. ρ was then converted into r of the product-moment formula. The results of all the tests in each class were also combined, and these combined results were correlated with their respective Intelligence Classifications.

IX.—The Results.

In the following Table the Means and Average Deviations (A.D.) of the different tests are given.

TABLE II.

Class.	Tests.	Analogies. I & III	Analogies. II & IV	Analogies. Total.	Opposites Total.	Sentence Completion. I & III	Sentence Completion. II & IV	Sentence Completion. Total.	Grand Total.
	Maximum.	50	50	100	100	50	50	100	300
IV.	Mean ...	7·6	·5	8·1	27·2	13·0	9·2	22·2	57·5
	A.D. ...	4·8	4·0	7·8	11·6	5·3	5·1	11·1	26·5
V.	Mean ...	16·5	6·4	22·9	38·4	18·7	13·6	32·3	93·6
	A.D. ...	5·9	4·2	12·0	9·7	5·4	4·2	11·1	28·0
VI.	Mean ...	16·9	10·5	27·4	42·6	19·0	17·7	36·7	106·7
	A.D. ...	5·2	4·5	8·5	8·5	4·1	3·9	7·4	20·1
VII and VIII.	Mean ...	23·4	16·5	39·9	57·7	27·6	25·4	53·0	150·6
	A.D. ...	5·4	5·0	9·4	12·6	4·9	6·1	9·8	35·4

It will be noticed that there is an appreciable difference in every case between the Means of the easier and those of the more difficult tests. This difference is generally more marked in the case of the younger children, since the more difficult examples become proportionately easier as the child increases in age and intelligence. It is evident that the difficult Analogies are too difficult for Class IV. The Mean for this Class only amounts to ·5, and negative scores were obtained in many cases. However, the system of marking employed, by which marks are deducted for incorrect replies, tends to produce a fairly high correlation with General Intelligence (·57). If incorrect solutions had been ignored many of the children would not have received any marks, and hence would have been undifferentiated.

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[1] The correlations between the two Intelligence Classifications for each group were very high, viz., Class IV, ·81; Class V, ·90; Class VI, ·89; Classes VII and VIII, ·92.

[2] Further information about this formula will be found in Brown, op. cit., Cambridge, 1911, p. 71; *or* in P. Sandiford, *Measurement in Education*, this Journal, 1912, I, 3, p. 217; *or* in Thorndike, *Mental and Social Measurements*, New York, 1913, p. 162.

The differences between the Means of the consecutive classes are generally large, and are usually greater than the Average Deviations of these Means. This is especially so in the case of the Grand Total, and thus one of the aims of the investigation is realized. The small difference in the Means of Classes V and VI corresponds to the small difference in the levels of intelligence which is known to exist between these Classes.

The Means also show that most marks are obtained in the Opposites test and least in the Analogies, hence, if the number of marks obtained is proportional to the difficulty of the tests, the order of difficulty appears to be:—Analogies, Sentence Completion, Opposites. Since the Means of the Analogies tests are much lower than the Means of the other two tests, it seems to indicate that the thought processes underlying the Analogies test represent a later stage of development than those underlying the Completion and Opposites tests.

The Means of the different tests, and the correlations with the Intelligence Classifications (see Table IV) are sufficiently alike for each class, especially with the older children, to justify us in obtaining the Grand Total of all the tests by simply adding together the separate totals, and not any multiple of these.

The following table shows the Reliability Coefficients for the different tests.

TABLE III.

Tests	Class IV	Class V	Class VI	Classes VII & VIII
Total Analogies	·75	·79	·60	·65
Opposites	·84	·91	·41	·85
Total Sentence Completion .	·84	·87	·66	·69

It will be seen from the above table that the Reliability Coefficients of the tests are very high in nearly every case, especially since different examples were used in the second application of each test. The Opposites and Sentence Completion tests seem to be slightly more reliable than the Analogies.

The correlations (r) with the Intelligence Classifications, along with their Probable Errors (P.E.), are given in the following table.

TABLE IV.

Class.		Analogies.			Opposites	Sentence Completion			Grand Total.
		I & III	II & IV	Total.	I & II	I & III	II & IV	Total.	
IV.	r ...	·43	·57	·51	·74	·64	·83	·82	·87
	P.E. ...	·13	·11	·11	·07	·10	·06	·05	·04
V.	r ...	·54	·63	·61	·85	·92	·77	·88	·84
	P.E. ...	·11	·09	·09	·04	·02	·06	·04	·04
VI.	r ...	·52	·65	·64	·72	·67	·81	·76	·87
	P.E. ...	·11	·09	·09	·07	·08	·05	·07	·04
VII and VIII.	r ...	·72	·81	·86	·81	·78	·85	·82	·86
	P.E. ...	·08	·06	·06	·06	·06	·05	·05	·04

It will be seen that the combined results of tests II and IV give higher correlation coefficients than those of tests I and III; thus the more difficult the test (within limits) the greater the correlation with the Intelligence Classification. In the case of the Analogies test, the Coefficients of Correlation increase with the age of the class. This again seems to indicate that the Analogies were too difficult for the younger children. The coefficients of correlation are sufficiently high to show that the tests are very good guides to the estimation of the child's intelligence. With young children the Opposites and Sentence Completion tests give the best correlation coefficients, but with the oldest children the Analogies test gives a higher correlation than these, which remain approximately constant for all ages.

The totals of each test give higher correlation coefficients than the parts. This indicates that the totalling tends to smooth down irregularities and neutralize discrepancies. Especially is this the case with the Grand Total, where the correlation coefficients are exceptionally high and remarkably uniform. The actual values for the different classes will be seen to be ·87, ·84, ·86, and ·85 respectively.

X.—Conclusions.

1. Analogies, Opposites, and Sentence Completion tests are again found to be exceedingly suitable types of tests for grading children in the order of their intelligence.

2. Tests of these types have been devised (see Appendix) and show when standardized that the difference between the means of successive classes is quite marked and generally greater than their average deviations. They also show a high correlation with the subjective estimation of intelligence.

3. The tests form a speedy, reliable, and suitable method by which children may be graded according to their general intelligence.

4. The more difficult series of tests give higher correlations with the Intelligence Classifications than do the easier series.

5. The highest and most reliable correlation coefficients are obtained by amalgamating the results of the several tests.

6. The thought processes underlying the Analogies test seem to belong to a later stage of development than those underlying the Sentence Completion and Opposites tests.

Appendix.

The following tests (which are a selection from the examples of the two series used in the above investigation) are given for the use of head masters who wish to use them for grading children who apply for admission to their schools.

Analogies—Test I.

1. Grass : Green :: Snow : ....
2. High : Low :: Long : ....
3. Finger : Hand :: Toe : ....
4. Roof : House :: Hat : ....
5. Sheep : Wool :: Cat : ....
6. Fish : Sea :: Scholar : ....
7. Writer : Pen :: Jockey : ....
8. Parents : Home :: Bird : ....
9. Sword : Steel :: Boots : ....
10. General : Army :: Teacher : ....
11. Book : Reading :: Chair : ....
12. London : America :: Near : ....
13. Fur : Bear :: Feathers : ....
14. Branch : Tree :: Arm : ....
15. Park : Gate :: House : ....
16. Bread : Eat :: Water : ....
17. Bell : Ringing :: Gun : ....
18. Bees : Honey :: Baker : ....
19. Much : More :: Good : ....
20. Coal : Black :: Brick : ....
21. Potter : Pots :: Miner : ....
22. Knife : Cutttng :: Pen : ....
23. Copper : Silver :: Silver : ....
24. Tree : Sap :: Animal : ....
25. Hit : Cry :: Poison : ....

Analogies—Test II.

26. Praise : Blame :: Reward : ....
27. Rest : Movement :: Captivity : ....
28. Buy : Sell :: Coming : ....
29. Anger : Love :: Fear : ....
30. Funeral : Wedding :: Solemn : ....
31. Wave : Ripple :: Town : ....
32. Man : Legs :: Carriage : ....
33. Clothes : Man :: Bark : ....
34. Picture : Frame :: Field : ....
35. Cheap : Many :: Dear : ....

36. Head : Thinking :: Legs : ....
37. Spring : Autumn :: Dawn : ....
38. River : River-bed :: Tramcar : ....
39. Bad : Worse :: Low : ....
40. Swimming : Water :: Flying : ....
41. Present : Known :: Future : ....
42. Bird : Cage :: Convict : ....
43. Black : Gray :: Red : ....
44. Barn : Hay :: Library : ....
45. Moonlight : Sunshine :: Some : ....
46. Pound : Weight :: Inch : ....
47. Agree : Smooth :: Disagree : ....
48. Forgetfulness : Neglect :: Thoughtfulness : ....
49. Danger : Injury :: Temptation : ....
50. Self-respect : Vanity :: Considerate : ....

OPPOSITES.

1. Cold ....
2. Broad ....
3. Sour ....
4. Birth ....
5. Idle ....
6. Beginning ....
7. First ....
8. Young ....
9. Best ....
10. Raise ....
11. Absent ....
12. Less ....
13. Over ....
14. Bright ....
15. Strong ....
16. Near ....
17. Many ....
18. Open ....
19. Quick ....
20. Future ....
21. Nothing ....
22. Presence ....
23. Find ....
24. Accept ....
25. Help ....
26. Wild ....
27. Push ....
28. Disgrace ....
29. Failure ....
30. Receive ....
31. Seldom ....
32. Bravery ....
33. Wealth ....
34. Apart ....
35. Lend ....
36. Superior ....
37. Halve ....
38. Refined ....
39. Oppose ....
40. Disperse ....
41. Escape ....
42. Despair ....
43. Silence ....
44. Humble ....
45. Ignorance ....
46. Covering ....
47. Doubt ....
48. Innocent ....
49. Pride ....
50. Caution ....

COMPLETION OF SENTENCES I.

1. The .... of the coin was round.
2. It was ...., for the stars were shining brightly.
3. Everything outside was white, for it had been ....
4. The river was .... on account of the rain.
5. He could hardly walk as his burden was so ....

6. The ship .... the rock and quickly sank.
7. He threw some .... on the fire to put it out.
8. Gold is .... valuable than silver.
9. He will have to work in order to .... at the examination.
10. Water always flows .... the hill.
11. The .... gives the earth light during the day.
12. The higher you go up, the .... the fall.
13. We lit the gas because it was ....
14. He .... the wood with an axe.
15. The .... of the cloth was green.
16. By .... the book he gained much information.
17. The trains were .... because of the fog.
18. The miner .... the pit and began to work.
19. He dropped the glass and it ....
20. The weather was very .... and snow began to fall.
21. Glass breaks .... easily than tin.
22. When the mouth is .... flies cannot enter.
23. Anything that floats is .... than water.
24. Evening comes at the .... of day.
25. .... water does not wash clean.

Completion of Sentences II.

26. .... prevailed, in fact you could hear a pin drop.
27. The train was late and I missed the .... of the play.
28. The light touched the oil and caused a ....
29. In summer the days are long because the sun rises ....
30. The one .... made the whole sum wrong.
31. The boy .... the windows of the room to make the air fresher.
32. The man .... the poem from memory.
33. One false move may .... the game.
34. One dog can .... a flock of sheep.
35. One can live on a little, but not on ....
36. It is hard to .... a full cup.
37. The man .... his work and was discharged.
38. The .... quickly became a gale.
39. The metal is expensive because it is ....
40. We burn .... coal in summer than in winter.
41. Speaking without .... is like shooting without aim.
42. The archer who overshoots .... as well as he who falls short.
43. It you say nothing, nobody can .... it.
44. A sleeping fox .... no poultry.
45. A river is cleanest at its ....
46. He .... her for her kindness to him.
47. A crowd were .... on the lake when the ice broke.
48. Learn to unlearn what you have learned ....
49. Sticky fingers soon become ....
50. The money was safe and correct, which proved the .... of the treasurer.

THE TEACHING OF "SEX-HYGIENE" IN SCHOOLS.

Some Further Considerations.

By BARBARA LOW, B.A. (Lond).

MANY of us must feel grateful to Miss Lilian Daly for her article in the last number of this journal on "The Teaching of Sex-Hygiene in Schools." It is a very necessary counterblast to the attitude, so prevalent nowadays, which would desire to inaugurate wholesale sex-instruction throughout the schools, without any comprehension of the possible psychological results. On every side we hear now that instruction in sex is not only essential and imperative, but a perfectly "simple" matter, presenting "no difficulties," and, therefore, as I said above, one welcomes Miss Daly's article as a serious and sane attempt to show that the whole matter is exceedingly complex and fraught with all sorts of difficulties. She points out certain very important considerations which are frequently overlooked by people whose zeal sometimes outruns their knowledge of one side of the problem. Those who are acquainted with the work of Professor Freud—undoubedly the greatest authority in Europe to-day on the question of the sexual impulse in man and its psychological effects—will hardly need telling that Miss Daly has in no way over-estimated the difficulties and complexities of this matter of sex-impulses acting in the child, and their relation to his sex-enlightenment. Freud's work, "Three Contributions to the Sexual Theory," reveals in the most illuminating and most amazing way the immense importance of the sexual impulse from the beginnings of the individual's existence, and, further, the far-reaching influence of this earliest sexual life in all subsequent development. Let me quote the words of Professor J. P. Putnam in his introduction to the English translation of the work in question:—"All the thoughts and emotions and desires and motives which appear in the man or woman of adult years were once crudely represented in the obscure instincts of the infant, and among these instincts those which were concerned directly or indirectly with the sexual emotions, in a wide sense, are certain to be found in every case to have been the most important for the end-result."

Again, Dr. Ernest Jones, in "Papers on Psycho-Analysis," says:—"The extent to which such matters (i.e., sexual matters, such as the difference between the sexes, the relations between the parents, the origin of children, and so on) occupy the mind of the young child is always underestimated by adults, and is impossible to determine by a casual examination, for on the one hand the late memories for those years are always both deficient and erroneous, and on the other hand this aspect of the child's mind is rarely accessible to direct enquiry, on account of the barrier always existing on the subject between child and adult."

Further, in the studies on Sex made by Havelock Ellis, we have very convincing proof of the richness and complexity of early sexual life.

I cite these authorities because it appears to me there is danger in a possible reaction (indeed, it is not only possible, but very manifest at present) against the demand for sex-instruction in schools, and Miss Daly's attitude somewhat exemplifies that danger.

She realizes that the question is profound, but she quite unintentionally shirks the problem rather than solves it—at least so I feel.

Some of the objections which can fairly be brought against her attitude may be dealt with here.

In the first place, her concluding remarks run:—"I beg to submit that the question of sex for man is a psychological rather than a biological one," &c. This seems to ignore the fact that the biological must underlie the psychological, or, as Dr. Ernest Jones says, in "Papers on Psycho-Analysis": "The driving forces of mental life, therefore, are ultimately derived from the primary instincts, and can never be independent of them."

If then, as has been suggested by the quotations earlier, the sexual impulse is one of the (perhaps *the*) most predominant instincts from the very beginnings of life, it is quite unsound psychologically (therefore useless as a valid theory) to make this clear-cut division. Miss Daly in several places argues from this same unsound "separation" theory. She tells us, for instance, "To many, an attempt to press on children's attention the physical circumstances of an event (birth of the human being is here referred to) in its essential nature spiritual, would seem to be a mistake because misleading."

Now, in the first place, what exactly is meant by calling the "event in its essential nature spiritual"? Birth is a physical fact, undeniably, even though many factors beyond the purely physical play their part in the event. If Miss Daly means that nothing connected with human beings would seem to be, or remain, purely physical, probably all will agree with her; but, as she has put the point, it is clearly untenable. The phrase, "An attempt to press on children's attention," is apparently at variance with the great authorities. The passage from Dr. Jones' book, already quoted, explains how greatly the young child's mind is occupied—spontaneously so—with sexual matters of one kind or another, and I will add a passage to further illustrate this:—"Psycho-Analysis has established that in the first four years of life the child is far more preoccupied than is generally thought with matters from which his interest has to be weaned. Before the ban of social pressure has come to exert its full force his attention is attracted by excretory acts and products, by vaguely pleasureable sensations situate in the parts of the body concerned in these, and later by problems and curiosities on all sorts of forbidden topics—the difference between the sexes, the relations between the parents, the origin of children, and so on."

This statement shows that the situation has been envisaged incorrectly by Miss Daly: those who would enlighten the young on sex matters are by no means pressing on the children's attention new and unfamiliar ideas; that they cannot do, if they would, since these ideas have already been for long in the child's mental life; they will, if they do the work aright, guide, illuminate, co-ordinate the ideas, often bizarre, misleading, partial.

A further argument brought forward by Miss Daly is that knowledge alone will not secure right conduct—an argument which she illustrates by the evil resulting from the precocious knowledge of the slum child. She writes:—"What about children whose unfortunate upbringing has rendered them unduly precocious? Here, too, the evil lies in too much knowledge of human life in one aspect, without enough knowledge of it in others. They grow accustomed to human life's happenings with little or no understanding of human life's idealisms." Exactly: in other words they have not the *correct knowledge*, and so are set upon a false and disastrous path in life. They have been left to get enlightenment in such matters in haphazard ways. In reference to this question of leaving the child to get his knowledge as he can, Havelock Ellis says as follows:—"This is as much as to say that there is no need to supply sources of pure water when there are puddles in the street that anyone can drink of." The slum child has drunk, and perhaps drunk *only*, from a puddle, and Miss Daly is blaming all water for the slum child's contamination. If the right knowledge, namely, the true physical facts, "in closest association with human idealism" (to quote Miss Daly's own very wise desire), had been given different results, both in the slum child and the child of modern suburbia, might be expected. That conduct is the outcome of knowledge and emotion combined is probably the truth, but without knowledge it is unlikely that we shall achieve desirable conduct. Miss Daly falls back at times on the idea of GOD as a basis for stimulating right conduct rather than any knowledge of facts, but surely this can hardly meet the case. In the first place, the child's sexual life (using "sexual" in a very wide sense) has so largely developed long before the GOD-conception could possibly be introduced. "When the *little* child asks where he came from, surely the truest answer for him is, 'From GOD,'" says Miss Daly. But will this answer convey anything to the child of four? On the other hand (I quote once more from "Papers on Psycho-Analysis," by Dr. Ernest Jones), "It is really hardly possible for a normal child to avoid drawing inferences from the experiences he meets with on all sides, his own sensations, the witnessing of domestic animals, the birth of younger children, the talks of older comrades or of licentious servants, and so on." How, then, will all this experience be squared with that answer "From GOD"? Will not the result be that the child will become "subjected to a mass of suggestion, all the more potent for being indirect, which teaches him that the subject is taboo, mysterious, improper, peculiar, and essentially wicked." ("Papers on Psycho-Analysis," Dr. Ernest Jones). I may also say that those who do not believe in a GOD, nor in any religious ideal, can hardly be expected to use such an argument for instruction, consequently her suggestion will be inapplicable always for a large number of people.

I have not space to deal further with Miss Daly's arguments. I conclude by saying that with much in her attitude I am in agreement, above all in her real understanding of some of the difficulties, but the defect of her attitude lies, to my thinking, in its negative position—perhaps the outcome of too little intimate knowledge on the subject.

The first essential for all of us who are interested in this matter of sex-instruction is to get knowledge ourselves, and we can be aided, to some extent at least, by study of the works of those who have gone most deeply into the problems concerned.

THE TEACHING OF ENGLISH. III.

By J. A. GREEN, Professor of Education, The University, Sheffield.

THE evidence offered in the preceding articles has probably been sufficient to show that the problem of the teaching of English has not yet been satisfactorily solved. Indeed, English is commonly said to be the worst taught "subject" in the school—a view which appears to apply as much to the Secondary as to the Primary or Evening Continuation School. It seems, therefore, worth while to discuss certain fundamentals, in the hope, at least, of partially clearing the ground for more detailed studies later, and perhaps incidentally of provoking discussion.

In the first place, we may ask what is the real business of the English teacher,[1] and how should the worth of his work be determined? Although it would require a book to answer these questions completely, they will serve as a guide for a short and tentative effort to deal with the problem. "Authorities" tell us that there are three aspects in which to view this work—the formal, the useful, and the æsthetic. Such a division is less complete and imposing than it sounds, nor is it, as it stands, a very helpful guide to practice.

To the three aspects we might at once add a fourth. An English teacher whose bent is linguistic rather than literary may regard his subject in the same way as the botanist, the chemist, and the physicist regard theirs, namely, as the study of a particular group of natural phenomena Even so, he may, like the botanist, approach the phenomena in two very different ways. He may think of his facts as they have been classified, and do his utmost to teach the classificatory system and its application, or he may regard the facts as vital phenomena which, under guidance, may be observed and recorded. Just as the botanist finds the life struggles of the plant-world attractive to children at a time when technical terms and classification would repel, and that

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[1] For the purpose of this article, the phrase "English teacher" is used to include the English courses in the Primary School, although they are not usually given by specialist teachers.

Nature Study is the best of all avenues to his own matured subject, may it not be possible for the English teacher to approach the systematic treatment of his material through the treatment of language on the lines followed by Nature Study at its best? The cases are not completely parallel, and it is not suggested that grammar, for example, ought always to follow the study of the natural history of language; but, if for no other reason than to show the incompleteness of the conventional summary, attention may be drawn to the possibility of a treatment of this kind, which may, moreover, have a value even for the senior pupils in a primary school.

A method comparable to that adopted in Nature Study courses means a method based upon direct observation. What sort of things may pupils of this type be led to observe and record? And what will be the outcome of the work? It is not possible to do more than suggest some of them. We may, however, specify the various methods of inter-communication employed by lower animals and men, gesture languages of various kinds, the beginnings of oral language in infants, the mistakes they make, dialect and slang, the variety of spoken languages, the borrowing and lending of words, the changes in the language over periods of time. All these topics may be treated in a way calculated rather to awaken a sense of linguistic development than to burden the memory with facts, the precise bearing of which can hardly yet be within their range. If the pupils catch the spirit of it, they will spring difficulties at times upon the teacher which he cannot solve, but surely nothing is more educative to young minds than to see a master whom they respect struggling honestly with problems, although he has to confess at the end that he cannot solve them. It is no small gain also if they realize that the universe has not been completely put into cut-and-dried compartments of knowledge.

Alongside the problems of oral speech and its origin, there is that of the written language. If a teacher does no more than show his class that what they have taken for granted all their lives has a long history, will it not have been worth while, especially if, where he leaves off, the pupils are introduced to sources of further information open to them in the school library or elsewhere?

It is not suggested that such work could represent the complete English teaching in any school, but may not something be done with it somewhere in the course? Is not this branch of Nature Study as important as that which deals with animals and plants? The facts are, many of them, even easier of access. The point of view is so new that interest is awakened at once. For many of the pupils, it is like a peep into a new world, the fascination of which may capture an adventurous spirit and turn him into an independent explorer.

The formal side of the study of the mother tongue, or at least that part of it which we call Grammar, might grow out of a similar treatment, but it would have to be a grammar which took facts into consideration, refusing at times to conform to traditional usage. But it is at least doubtful whether the grammar of the mother tongue would be worth the effort spent upon it, except in those cases where the pupils will sooner or later learn another language, and even then it is uncertain whether the grammar should precede the second language or begin when the forms of the second language are already coming under notice.

The biological approach to language study is, however, not commonly represented in school. English specialists are not usually prepared for it. The point of view is too near that of psychology and the psychology of language is a sealed book to many of them—a weakness which cries aloud for remedy, owing to the peculiar nature of their subject. Of all teachers they are most directly concerned with the inner life of their pupils. Yet much of their work misses fire. Is it, perhaps, because they have not thought it out in terms of that life?

In so far as the school activities as a whole touch the life of the pupils, a special compartment of English in the school curriculum seems unnecessary, and there is much to be said in favour of the traditional practice of the grammar school, which gave no special place to English because English was everywhere. It is the medium of instruction, of discussion, of translation, and, from the standpoint of use, the subject seems amply provided for. Whether we accept this view or not, it is surely fair to urge that the tendency to put the whole of the training in English upon the specialist teacher threatens to put upon him a burden greater than he can bear. English is the only tolerably efficient instrument of thought for the ordinary schoolboy, and whenever his "lessons" are making a call upon his thinking powers, he is getting an exercise in English.

When the thinking process is not an end in itself, so much the better for the purpose. In the History lesson, pupils think for the History's sake, not for the thought's sake. This is the type of situation which is best for the thinking process itself. Nothing is more tiresome than trying to think when no object about which we care is served thereby. Adults, of course, never make the attempt, but they often require it of children. In lessons, when subject matter is the chief concern, we may insist upon clear and simple forms of expression in the interest of the subject matter—a more natural and more effective standpoint than that which looks at and endeavours to evaluate forms for their own sake or in relation to content in which the writers have very little interest.

In so far as the English teacher is expected to undertake the training in composition, we sometimes describe it as training in self-expression; we generally use the term without thinking out all that it implies.

In the first place it may be urged—and not unreasonably—that linguistic capacity is usually adequate to our actual needs, or, to put the same point in a rather different way, that linguistic power grows with the feeling of its present inadequacy. A young child learns in a very short time to talk well, largely under the impulse of necessity. Without language, he can only cope feebly with his environment. The boy at school who is desperately bad in his compositions uses language effectively at home or in the playground, and his schoolwork would improve rapidly if he could be led to feel the "reality" of the life he was leading there. In such a case, linguistic incapacity would bring with it serious inconvenience. There would be a real linguistic demand which would bring progress, without any consciously directed effort. When he is older the want may be present to his mind and he will try, but in the meantime growth is rather an organic one. We are built like that. Power grows where organic experience shows the need and the advantage.

In dealing with the mother tongue we are concerned with something deeper than a veneer of words. The failure to recognize this makes the pronouncement of the Board of Education on the Teaching of English in Secondary Schools disappointing, and, in its essence, formal, and the same omission characterizes much other writing upon the subject. Even vocabularies increase as our sensibilities increase, and not by making lists of words and hunting up meanings in dictionaries. Language is an instrument of *self*-expression, and if the pupil has a language at his command which is adequate to his own needs we can do nothing with him that counts.

This is the trouble in many evening schools. The boys are keen about their mathematics, their mensuration, their science, but they cannot see the good of the English lesson. They are rank utilitarians, and they cut the useless work whenever they can. To put a linguistic veneer upon a boy who will feel awkward and ashamed whenever he uses it is not worth the pains, and the only way to attack the problem of language is to approach it indirectly by considering how we may hope to stimulate the growth of the self which is to be served.

We are now brought back again to the view that we cannot separate English from the rest of the work of the school. Under its influence new worlds are being opened out to the boys; new interests are being awakened, and old ones are being deepened and broadened, new responsibilities are being put upon them. These things mean inner growth, the development of new needs which call for a more varied, a more delicate instrument of expression, and the written work done for the teacher of history or geography or science offers a natural occasion for its use. Here the boy reveals himself or struggles to do so, and the teacher may find out whether he has really reached him or no. Should the subject or its treatment be purely intellectual, at least the pupils should learn the art of clear exposition here. Teaching to write effectively has point in such a context, and the pupils recognize it.

Generally speaking, school English on its written side and as it is treated in the English lesson seems to assume that it is possible to make all and sundry into literary artists. A well-written essay is the beginning, middle, and end of the endeavour. Work on these lines usually degenerates into formalism and insincerity because it is against the natural inclinations of the pupils. Like most of their parents, they are impatient of writing as a means of expression. Under the fetter of such a necessity, warmth of feeling and the impulse to let themselves go, tend to disappear. The result is a bare record of fact more or less clearly set out, or a jejune collection of incoherent sentences which it was a great bore to write and an even greater bore to have to read. Speech is the natural outlet of feeling, and the best means of communication, but speech is apt to be inexact and to cause trouble through want of restraint. When speech matters a great deal, we put what we want to say on paper, either in the form of notes or *in extenso*. To be able to speak well is a form of ambition which appeals to most boys more readily than to be able to write attractively, and the advantage of preparation in such a matter is obvious. Might this not give useful direction to our efforts in training to write? It would at least have point when the customary essay has none.

If a boy is going to make a speech or read a paper, we can make him feel the necessity of taking some definite line. He does not want to bore his hearers, though when he is writing for his master simply, he has less sympathy. Indeed, his master expects to be bored, and makes up for his want of interest in the subject matter, by culivating a purely professional interest in commas and full stops, or, it may be, in grammar. He does not look upon the work as a living product, and yet it is the life in writing that counts and not the observance of rules.

"Art for Art's sake" is not a sound pedagogical principle, whatever its claim to consideration outside the walls of the schoolroom. What we want is to find for the boy a real motive for writing. The more he is inspired by that motive, the better his work will be, and the more conscious he will be of its shortcomings.

A further difficulty about the essay is that only a small number of boys ever arrive at any sort of criteria for the estimation of their own work. They feel that they have to spin out a page or two of foolscap, that the work must begin, that it must have a middle and a winding-up, but whether what they have written has any other than these formal qualities they cannot say. It was a task, and they have completed it to the measure required. Even the conscientious schoolboy does not get much further. From the point of view of criteria, perhaps exercises in description would be less difficult. There is an objective measure of success in this case, for there was a familiar object or moment to be described, and if the work is ineffective the writer knows it as surely as he recognizes the right thing when he hears it. He can distinguish a genuine description from a haphazard setting down of qualities, and we may teach him through description the true use of paragraph.

Whatever the form the writing takes, it is essential that it should fulfil some purpose with which the pupils identify themselves. They will under these circumstances write less, but what they write will serve a practical end. The measure of success lies in the effective accomplishment of the object. So distinguished a master of English as Lord Morley, in an address to the students of the London Society for the Extension of University Teaching, is doubtful about the usefulness of writing for writing's sake. "I will even venture, with all respect to those who are teachers of literature, to doubt the excellence and utility of the practice of over much essay writing and composition. I have very little faith in rules of style, though I have an unbounded faith in the virtue of cultivating direct and precise expression. But you must carry on the operation inside the mind and not merely by practising literary deportment on paper. . . . Everyone can make reasonably sure that he knows what he means, and whether he has found the right word. These are internal operations and are not forwarded by writing for writing's sake. . . . The foundation of right expression in speech or writing is sincerity. That is as true now as it has ever been. Right expression is a part of character."[1]

But it is as important for the teacher of English to train in the power to synthesize, to sum up in a sentence another person's message, as it is to train in ordered analysis like that of description or exposition. Many people can read sentence by sentence without catching the drift of the paragraph, and many follow the paragraphs without grasping the argument of a chapter or a book. Précis-writing for the boy's common-place book offers a field of valuable work the use of which will be clear to most lads when the material is chosen from the standpoint of its usefulness, and not taken from a book of selected passages arranged by somebody else for his own boys or for "average" pupils of the age in question. If examination experience is sufficient warrant for the statement, pupils who are set to write précis usually do the work sentence by sentence, without making the preliminary effort to grasp the passage as a whole. But, without writing anything down, they may listen to passages read aloud and gather an argument into a couple of sentences. Until they have done this they cannot know whether it is important enough for detailed examination. In this way they have to listen to and to take in, in a cumulative fashion, a whole passage. Speeches and newspaper articles furnish material of current interest which often appeal especially to evening school youths who are apt to be impatient of what is more classical, but unhappily also more remote from their interests, and therefore cold and unattractive.

Before leaving the utility aspect of English, a word might be said in favour of making our pupils acquainted with current works of reference in the language, and the mode of using them. Whilst we may cast doubt upon the wisdom of trying to *teach* a boy to like poetry, there is no reason why we should not successfully show a lad in Standard VI how to use Whitaker, the Statesman's Year Book, Hazell's Annual, Who's Who, Chambers's or the Everyman Encyclopædia. Similarly we may teach him how to use the indexes of books which he desires to consult. Lessons in the methods of research are inconceivable in the abstract, but we may create situations which call for the use of books in ways which present many of the features of what we call research. If this sort of thing does not come into the English lesson, may it not drop out altogether?

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[1] John Morley: Studies in Literature (p. 222). Eversley Edition.

The English specialist will hold up his hands in astonishment. Was it for this he received his University training in English? What of his labours in Anglo-Saxon or Early English Texts? What of his critical studies in more modern literature? From the point of view of the school as a whole I am frankly sceptical of its value. I am inclined to think that the influence of the English specialist in the schools has not always been good. A teacher of English stands to his pupils in a different relationship from that of the teachers of Science or History. The latter are concerned primarily with imparting knowledge or teaching how knowledge is to be acquired, but this is not at any rate the chief business of the English teacher, and his special knowledge sometimes clouds his vision. Mere usefulness must be a principal object of his teaching. How can I make my pupils defter in their use of the thinking instrument? What can I do in the way of familiarizing them with the existing aids to purposeful thinking, such as have been prepared for busy people who cannot spend much time in hunting up facts?

Clearly this does not exhaust the mission of the English teacher, though his highest aims carry him still further from the standpoint of other specialists. In this respect he is in fact nearer perhaps to that of the clergyman. His ultimate object is to save souls, and just as a man may know the Bible thoroughly without having a spark of religion in him, so may an English student have a sound knowledge of the literature of his native land without having any genuine literary feeling. Such a man cannot accomplish the higher aims of the English course, though he discourse for ever upon poets and poetry in the most approved German fashion.

It is at least debateable whether the capacity for true literary appreciation is so universal as our school English courses assume. It is beyond question that the great majority of boys and girls leave school and never open an English classic again. It does not, of course, follow that this comes from innate want of capacity for such forms of enjoyment. Possibly the schools kill the capacity which children bring with them. I have heard prosperous business men, products of public schools, trust the choice of their "week-end" reading to an ignorant shop girl. Here, at any rate, there was no pretence, though it brought home the failure of a long school life to establish any kind of independence or delicacy of judgment in so personal a matter as the choice of a book.

Some put this failure down to the analytic treatment to which literary masterpieces are subjected in the vain effort to make everything in them comprehensible to the pupils. They tell us to leave explanation altogether. "Just read aloud a great deal, and let the author explain himself." Certainly experience suggests that the teacher who can read aloud fairly effectively will do more for literature in the school than an English expert who cannot read well. The emotional contagion of the cultivated voice is a great factor in success when success is attained. But I am very doubtful whether even first rate reading will establish a love of classical literature strong enough to lead youths to seek it out after they leave school; it seems highly probable that a more modest ambition might in the end achieve a higher result. For genuine appreciation of literature is by no means widespread amongst teachers themselves. Temperamentally, they share the same disabilities as other men and women, though it would be fair to suppose that the percentage of those of "a literary turn of mind" amongst teachers is higher than it is amongst laymen who have had fewer opportunities and and less leisure for its cultivation.

Whereas it may be true that many schoolmasters are not and never could be inspiring in their treatment of literature, as we generally understand that word, and whereas most boys come to look upon it either as something rather effeminate in its appeal or as "rot" (at best they feel it is rather a priggish affectation to pretend to like poetry), both boys and their teachers are human, and boys at any rate have yet their freshness to lose. They can, most of them probably, be caught in one or other of the many possible nets of interest which their masters try to cast about them, and in pursuance thereof, they will read if the books are at hand. Many will be attracted to books of travel. Beginning with a catholic love of adventure, they may narrow it down to a special interest in African, or Asiatic, or Arctic exploration, within which field again more specialized curiosity may grow. This is merely typical of many possibilities, and we must remember that tastes vary greatly, or rather boy-natures. It is for us to discover what worthy line of interest appeals to them, and to cultivate it with all our power.

Clearly, work on these lines demands a library, and I would seriously urge that the provision of class libraries in schools of all types, and at every stage in the school after the children have begun to learn to read, is one of the most conspicuous needs in our educational system. The want is chiefly felt in the primary and evening continuation schools perhaps, but not much less urgently in the municipal secondary schools. Authorities cry out against the expense, though they are prepared to pour out money like water upon laboratories, the value of which is often questioned by men of high scientific eminence. It is possible to teach the mass of boys and girls the use of books, and to link up that use to some interest or other that will last beyond the school age—whether it be stamp collecting, or heraldry, or steam engines is not of much moment—if the teacher has the material in his own classroom, under his own control. A good home provides this type of thing for its children; what a well-equipped home may do for itself, a group of children from various homes might do co-operatively in some cases, but, where that is impossible, the co-operation should be managed through the rates and taxes, which are at bottom only another form of co-operative action.

We talk sometimes of encouraging boys' hobbies at school. No hobby is worth anything which has not got a literature of its own, and there is more hope, even from the aesthetic standpoint, for the class in which the lads are individually keen about the literature of photography, or coins, or hens, or butterflies, than for another class condemned to read "tosh" at the dictation of a syllabus-maker who lives, remote from boys, somewhere in the cloudy firmament. A wise or a free teacher will administer the "tosh" under pleasant circumstances, in complete absence of examination pressure, in an atmosphere of joy, and free from any taint of didactic superiority. Insidious suggestion may do something for our literature, when blatancy or compulsion would do great harm.

TRAINED LEARNERS.

By S. E. RICHARDS, Principal of Stockwell Training College.

In the April issue of the *Journal of Education* there appears a short comment on Mr. Smail's remark in his memorandum on Trade Schools, to the effect that they cannot turn out trained workers; their function is to turn out "trained learners." "This happy expression," continues the *Journal*, "might well be taken by training colleges for their motto. They, too, can hardly claim that under present conditions their product is the finished craftsman; but what more need we ask from them than to send into the schools young men and women who have been trained to learn?"

Probably all who are engaged in the work of training teachers would willingly endorse the opinion expressed in the paragraph here quoted. The majority might add by way of counter-criticism that they have long accepted the proferred maxim as their motto, and that they have thereby disarmed the critics who never tire of declaring with growing persistence that the training colleges are not producing trained teachers.

The colleges do not aim at producing trained teachers in the sense of finished craftsmen, because so fully alive are they to shortcomings and defects in their alumni, which only time and experience can remedy, that they recognize such an ideal to be impossible. The popular conception of the word "teacher" needs revision; it suffers from its own apparent lucidity, and by its very straightforwardness leads the unwary astray.

"A teacher," says Edward Thring, himself a great example of his art, "is a combination of heart, head, artistic training and favouring circumstances."

To attempt to unfold the connotation of these terms would be to commit oneself to a series of platitudes, but it will be readily granted that the combination of qualities, intellectual, moral and æsthetic, implied in the definition, cannot be looked for in the students who leave college after two, three, or even four years of training. The potentiality may be there, but not the fulfilment, and it is the province of the college to do all in its power to ensure that the potentiality be there, not to set before itself the impossible ideal of developing in its students that perfection in the teaching craft which is only attained, if attained at all, as a result of long experience. So hard an art it is to teach.

At no time has criticism of the young "trained teacher" been more insistent than it is at present. Changed conditions of preparation previous to the training college course have materially altered the professional equipment of the student. It is not within the scope of the present paper to compare the systems new and old, but to restate a self-evident proposition, that changed conditions have brought inevitable results which have to be faced in the training colleges. That a lengthened period of time in the practising schools must be an essential feature of the college course is not open to question, but that the extension of the period is to remedy all defects and in two years to produce teachers who are past masters of their art is a proposition that must be unequivocally negatived. Rather does it seem necessary in these days to urge that there might even be a danger in over-emphasizing the professional, at the expense of the academic aspect, of training college work.

A trained learner—the phrase is most illuminating in its suggestiveness and its possibilities. It implies the possession of mental and moral qualities of the utmost value to the future teacher, and it may be worth while to dwell a little on these implications.

A learner is one who is conscious of his own ignorance; otherwise, what motive could he have for learning?

Further, a trained learner is one who has been taught how to grapple with his own ignorance, and that is a life-long task.

To produce this state of Socratic ἀπορία is one of the first duties of the college towards its students, to show them how to acquire knowledge for themselves is the next. It is not a paradox to say that the mission of a training college should be to send forth its students conscious of their own ignorance, for such consciousness is a necessary condition of the future attainment of knowledge.

One cannot sometimes help suspecting that the multiplicity of subjects of the curriculum, both at school and college, tends to make a student's knowledge loom in undue proportions before his mental vision. We need a corrective for this modern form of encyclopædism, and the corrective becomes increasingly necessary for the teacher since daily contact with immature minds magnifies in his eyes his own apparent maturity.

There is, however, the complementary side already noted; consciousness of ignorance must be accompanied by knowledge of the means whereby that ignorance may be lessened, though here, once more, we are led into the region of seeming paradoxes, for an increase of knowledge always gives the true learner a fuller realization of his own ignorance. But this is the test which distinguishes between the trained learner and the more or less (probably less) perfect machine.

The student who leaves college with the power to use books and the desire to gain knowledge for himself has something of the trained learner's equipment. One of the not infrequent causes of a young teacher's failure is incompetence in this most important aspect of his work; students must be made to realize that lessons based on the school text-book alone are of little value, and that while ignorance of a subject is not an educational crime, failure to rectify that ignorance by a more exhaustive method than that of reference to the text-book cannot be condoned. Such realization can only come from the fuller knowledge that a more intensive study of a subject gives. If a student has realized something of the possibilities of knowledge, even in one subject, he has done much. It is his only safeguard against that superficiality which the diversity of subjects in his curriculum must in some measure induce. Even the seeming comprehension of a subject may not be without its dangers, if it makes the student view his knowledge in a false perspective and magnify it with the glasses of an unjustified self-satisfaction.

His power to define is not necessarily a criterion of his knowledge, for it may well be, in so far as the essence of definition is limitation, that he is setting up barriers to further progress by virtue of the limited exercise of that very power which it has been the function of his education to develop. Words may effectually veil ignorance and the familiarity, which offers no inducement to a further quest, prove an almost insurmountable bar.

The spirit of inquiry must be roused in the student and the love of books encouraged. More time is needed for independent reading, less perhaps for attendance at lectures. The recent tendency to let the more formal lecture develop into the symposium, in which all take their part, is an indication of the trend of educational opinion on this point. But here, too, there seems to be some need to guard against an opposite extreme. That students should find knowledge for themselves is an ideal pregnant with much good, but the theory that the lecture, whose function it should be to give inspiration in that quest, may be entirely superseded, must be denied. The lecture in itself should be an antidote to superficiality in its revelation of possibilities to which the unaided efforts of the students could not attain. It is for this reason that one may question the wisdom of dwelling too much on the method aspect in dealing with the academic subjects in a training college. Incidental reference is necessary and desirable, but such treatment if carried too far tends to minimize their cultural value, which cannot be over-estimated.

The need of further instruction in methods of teaching, which is universally admitted, may be met by the increase of the period devoted to school practice, and this increase will lead to no very serious curtailment of the time given to academic studies, now that the long-desired reduction of the number of compulsory subjects has become an accomplished fact. To diminish to any very appreciable extent the opportunities afforded for general as opposed to professional education must have an ill effect on the future teacher. His professional salvation lies in his mental adaptability, in his power to master new conditions and to adapt himself to changing environment, and such qualities are the fruit of a broad and liberal education.

Of the many difficulties in the path of the young teacher, no small number may arise from his own superabundant enthusiasm. In these days of new ideas and eager adoption of any fresh theory or method that can find a receptive audience, he needs to guard against misplaced enthusiasms. They have their own peculiar dangers no less than the mental stagnation which uncompromisingly rejects all that is unfamiliar and unknown.

A balanced judgment is not an attribute that may be confidently looked for in the inexperienced teacher, but an open-minded readiness to listen to both sides of a question is an essential characteristic of the trained learner, and it is the province of the training college to try to cultivate this attitude of mind.

FRENCH IN TRAINING COLLEGES.

By M. HOLMES, late Lecturer, Homerton Training College, Cambridge.

It is with good intent and a due sense of modesty that I wish to make a critical retrospect of four years endeavour to carry out a certain part of the policy of the Board of Education which would seem to find expression in the list of Additional (once Optional) subjects included in the Elementary Training College Syllabus. This list formerly included seven languages, which, in contradistinction to the other subjects mentioned, form no part of, and have no direct connection with, the ordinary curriculum of Primary Schools; they are not, that is, "professional" subjects. By a broad-minded person acquainted with the very various types of school, classed as elementary—types called into existence by varying social, industrial, geographical, and local conditions, and also by happy experiments due to the direct personal initiative of their directors—all the subjects in the Optional-Additional list, except perhaps the foreign languages, can be pressed into practical service, and be regarded as directly contributing to the complete professional equipment of the teacher. The student who has carried any "professional" subject to the standard of the optional examination may presumably have acquired a sense of the dignity and scope of that subject, which cannot but reflect a very favourable influence on his teaching of it in its beginnings and humbler stages. If he has ever attained to the rather dizzy heights of an optional in Mathematics, his teaching in Arithmetic will not of course necessarily be better, but it may be. It is to be hoped that a deeper study of Physics, Chemistry, and Botany will favourably affect the teaching of Science; and even Rural Science and Housecraft may have an appreciable influence upon the time-tables of some enterprising schools. The rest of the subjects, with the exceptions we have noted above, fall quite readily into a scheme of advanced education that may be regarded as having, to some extent at least, a marked "professional" bias. But what of the exceptions? Originally, French, German, Spanish, Italian, Latin, Greek, and Hebrew, the New Regulations have christened the Optionals "Additionals," and reduced the seven languages to three. French, German, and Latin, however, still remain to exemplify the policy under discussion. Mutely suggestive of remote educational possibilities, they stand, we take it, as a protest against scholastic commercialism, a touching tribute to the academic, a recognition of the learning that is merely delightful indulgence. We see in them a kindly approval on the part of the Board of the existence even in Training Colleges of those dear people whose tastes are just unaccountable. Such tastes may be the outcome of mixed nationality, parental ambition, individual freakishness, or merely of Secondary School education, but, due to whatever cause, the Board has hitherto fostered and cared for them, and under the new regime evidently proposes continuing to do so—in moderation.

The problem has been, and is still, I think, threefold: it concerns (1) the Staff, (2) the Students, (3) the Examination. The first problem is in a measure solved by the motive just now attributed to the Board. There is no reason why the people of unaccountable tastes should all be students. There are numbers of them at large, in casual places, and they can quite easily be appointed on Staffs. It is open to any College to appoint on these lines; that is, appoint a lecturer more highly qualified in some other subject than French, and let French be frankly regarded as subsidiary. In such a case the lecturer may be supposed to look upon his French work as a something *de luxe*, the dedication of a personal inclination, a happy preservation of school and home associations, of memories of French family life and *cours de vacances*, of holiday adventures and times of pleasant travel. It may be a most successful appointment, but possibly one open to criticism as being scarcely compatible with a right measure of professional proficiency and earnestness, nor with experience of the optional examination as at present constituted. Would the College be better advised, then, to appoint a specialist in French, and make some other qualification subsidiary? This again may be a highly successful plan, such saving grace is there in the individual and in the truth that "circumstances alter cases." But I think a protest may very well be entered on behalf of the lecturer appointed under these conditions. The French classes are usually small, and for the sake of the general scope and purpose of College training must remain so. Moreover, generally speaking, the students in them are not the most promising material for specialized linguistic study; they rarely have a knowledge of any other language than English, and their knowledge of that is often very indifferent and inadequate for translation purposes. Neither is there any reason why the French lecturer should engage in a kind of philanthropic crusade of French teaching throughout the Junior year and the College generally; even if he were willing and it were permissible to do so, time-table demands and the overladen curriculum of which we have heard so much would entirely preclude it. So unless a lecturer appointed in this way managed to find some other outlet for enthusiasm and professional ambition (which by the very nature of his appointment and qualifications is well nigh impossible), or else is content frankly to regard his post as but a stepping-stone to higher things, he finds himself cut off from taking any leading part in the general work of the College, and destined to toil, quite happily it may be, but ineffectively, in an academic backwater.

There is still a third option: the College may appoint a person highly or sufficiently qualified in two subjects, and make him responsible for work in both. This is possibly the best, and seemingly an excellent plan; a little extravagant of ability perhaps, and requiring a good deal of careful organization in the delicate problems of collaboration and assistance. Still there are some of the chief subjects in the syllabus that admit of, even if they do not altogether invite, division of labour; so that this arrangement, if fairly administered, may prove eminently workable.

The second problem is the student; perhaps some people would say he is the first, but it will be fairly evident, I think, to any reader whom the subject may concern, that the three problems are one, and that the order here adopted is merely for the sake of general convenience. It has also the advantage of being in accordance with what one may call collegiate chronology, which means that (1) the lecturer is usually more or less of a fixed quantity, the past surviving into the present wherein he greets (2) the student, who after two years duly takes (3) the examination. The student is very intimately bound up with the examination, so much so that I do not know how to separate him from it, and hence (2) from (3) in my paper. If he is a strong student he passes that examination, smiling the while. Even with the oral added he contrives to survive. He could probably have done as much at the end of his first year. Of course in two years he has increased his vocabulary, which may make a net difference of two technical terms and two idiomatic expressions in Ques. 1 (prose translation), and save him a "howler" or so in Ques. II (poetry), in Questions III and IV (composition and a very short essay, usually on a highly impossible subject), he scores literally indefinitely, and perhaps gains a distinction. Naturally during the two years he has read a great deal, and had rather a good time in fact among the French books in the Library and papers in the Common Room; he has virtually led the conversation circle, shone in social converse with his lecturer and occasional French visitors, acted in a play or two, and enjoyed himself generally. But the Examination knows nothing of this. The oral may discover a little of it; but no one knows much, for unfortunately his class is not composed of individuals gifted like himself. He is probably the brilliant exception of his year, whom for many reasons it is found impossible to coach separately, and his lecturer therefore can only know of his extraneous activity through that rather elusive medium, "individual attention."

The class is composed of average and of weak mortals, who do not know their irregular verbs nor the use of the subjunctive; much less the eccentricities of past participles, expletives, and rules of syntax. In all probability they have never been thoroughly grounded in the grammar of any language, and French is their first introduction to formal grammar as a living and necessary thing, to a close study of the intricacies and subtleties of language and finally of style. They are apt to find such study disconcerting, irksome, and entirely lacking in practical purpose. Translation especially becomes a study of fine distinctions.

> Oh, the little more, and how much it is!
> And the little less, and what worlds away!

is, as a rule, precisely what they cannot estimate nor appreciate. Their English is by no means equal to the strain, and the "French" timetable hour is regularly once a fortnight at least devoted to the study of English as a means of accurate expression. Having no Latin, they would of course be much happier and safer in German, but French, I understand, is by far the more popular "Optional"—a natural result, since it remains the foreign language *par excellence* in the Secondary Schools. Much can be done, especially in the first year, by a good choice of interesting reading material, and an avoidance of readers and books of extracts and "unseens." Many peculiarities of construction, colloquialisms, idiomatic expressions, and a very great deal of general language work can best be done by means of stories, abridged novels, plays, poetry. But grammatical instruction and drill, some phonetics, and the correction of written work does not leave much time for reading aloud in class. The time for preparation is also limited, and is more usually given to composition, learning by heart, and the many other varieties of exercise that offer the teacher a better means of checking the amount of actual work done. Whether we will or no, the reading of more than a few pages set for the next lesson is usually regarded as a negligible "extra" by a student who can only read slowly and laboriously. These, however, are difficulties well known to every teacher, and the French lectureship in an Elementary Training College offers scope for very hard and thorough teaching. They are difficulties that can only partially be overcome. Quite a good device for doing so would seem to be an additional French library of well-edited, inexpensive school-texts; for vocabulary and notes are, in the case of weak students, a very necessary time-saving appliance, and handier than the more cumbrous dictionary for purposes of rapid reading. Such texts can be readily circulated and exchanged, and offer easier and more attractive reading than the standard works and long novels on the shelves of the College Library proper.

It is high time that problem (3) i.e., the examination, be directly considered. It is, in my opinion, a highly unsuitable test for the particular type of student that is usually met with in Training Colleges—a student enthusiastic about his professional work, keenly interested in what is technically known as the "method side," in *things* generally, but very impatient (and rightly so considering the nature of the work for which he is being trained) of any kind of academic attitude or mere bookishness. Many of these students, we must remember, have behind them an educational record which is little more than a tradition of oral instruction—at its best, just immediate, practical and direct. Very few have even a nodding acquaintance with the world of books as books, of writers, and authority. Poetry and Drama with a very judicious admixture of clear and simple prose constitutes the ideal English syllabus for the majority of the students including the "Optionals," and on this they thrive; their criticism is refreshing and natural, their appreciation unrestrained. The world of things and people, what happens and who feels, this is what appeals to them primarily and not the perfection of the literary medium. "Style," say they, "is a cold, critical and artificial process, a fad or an inexplicable privilege of the literary middle-aged. We know good writing when we see it, and we like it, but let us not stop to analyse it now. Give us things to understand and hear about for the first time, and feel, and then if you ask us to write about them, why, of course, we will!" And they do. The chosen few may even learn some style in the process; if there is any possibility of their doing so they are, of course, put into the Optional Class. But this is in English, the subject to which all our common experiences and daily happenings contribute. And it is in the foreign language, to which nothing but the rare and the exceptional ever contributes, that we elect to require proof of little more than linguistic study, critical appreciation and maturity of thought.

And now about the Optional Examination, I am deliberately going to "reminisce" a little and then to day-dream. When I first undertook to teach French in a Training College, I used to boast that my subject was the only truly educational one in the syllabus. It seemed to mean purely disinterested culture; the personal perfecting of the individual, apart from any definite task that might later in his professional capacity be required of him. Studying it, no one could possibly be suspected of scholastic commercialism. It was far removed from the busy hum of schools, criticism lessons, and the clashing of rival methods and systems. In a time-table mainly composed of sterner stuff it figured as a thing frivolous and graceful, a thing to be taken up in afternoons and evenings, a kind of glorious educational *hors d'œuvre.* In those days people read plays and stories just for the sake of knowing what happened in them, and without any particular care of the words themselves. In conjunction with Baedeker's "Paris" they studied maps with Paris on one side and "*les environs*" on the other. They did outline studies of French Literature and of well-known figures in French History. They sang nursery rhymes and the phonetic triangle, and, transcribing poems of Verlaine in phonetic script, caught glimpses of the study of versification renewed and glorified. Then the shades of the prison house began to close around, questionings were heard, and once a dark figure that was perhaps Conscience—perhaps Despair (it is not certainly known which, but its influence was baneful) arose and whispered that the only result obtainable was the survival of the worst vices of the Direct Method, that the students were not linguistically nourished and profited by such varied fare, that spade work was being sacrificed to the merely agreeable in French. "French" in fact was fast corrupting the morals alike of teacher and taught, and had nearly succeeded in pushing into a remote background the lubber fiend who sprawled his whole appalling length all over the examination paper. The darkest day was when the "Optional" Class became like the London Intermediate, only at least a term behind, and its standard, we knew, was irrevocably fixed by the Regulations at "approximately" or "rather higher than the standard required in order to pass in the subject at the Intermediate Examinations." A sorry plight!

I don't think we ever really recovered. We have, of course, had snatches of fun. Human nature will be human nature, in spite of Rivington's Rapid Exercises and the irregular verbs of more languages than French; but one of us at least has a haunting sense that fun may be naughtiness, even a superfluity of naughtiness, considering the imminence of the written examination. Sometimes when I am preparing lessons, i.e., trying to work some sort of miracle that will make extremes of the agreeable and disagreeable meet, I fall to thinking of what might be. My visions, as visions are wont to be, are bold. I see an examination especially adapted to the mental calibre and the manifest needs of the Training College Student. I see him no longer condemned to two years hard labour at barren language study in order to pass on a paper that looks rather like a Tripos or Schools paper, but isn't. I see him spending his two years in busily acquiring as much of a foreign culture as is possible in the time, acquiring of it, moreover, just those elements which at his stage of mental development are suitable and likely to be of use to him; not intricacies and subtleties (beauties, if you will) of style, not language for its own sake (the understanding of which develops quite late even in a student who has had a definite and prolonged literary training) but language regarded simply as a means of expression, the key that unlocks and gives access to the life of another nation. Of course a reasonable standard of grammatical accuracy and syntactical knowledge must be insisted upon, and would more easily, I plead, be obtained. Let a scheme, or better, several schemes, of study be drawn up that the student may be sufficiently tested by the examination on at least some part of the work he has done. In formulating such schemes it appears to me important that these two leading principles should be firmly adhered to:—

A. Some correlation should be indicated between English and French Literature and History, or both. This offers scope for a variety of delightful plans, e.g. (1) a comparison of some literary movement in the two countries, e.g., the Romantic; *or* (2) a comparative study of the origin of the theatre in both countries: Miracle and Morality Plays with diagrams of the pageants and interesting descriptions of the performances; to be treated very popularly and simply, a mere outline study of salient points and with a rigid abstention from any but the simplest of old French expressions in the extracts read; *or* (3) French educational theories: Rabelais, Montaigne, Rousseau; *or* (4) Napoleon in History and Literature; *or* (5) Phases of French literature that contrast with English literature, e.g., the Classical Theatre, the Fable, Versification.

These sound great and perhaps ambitious subjects, but the leading ideas can be easily explained in quite simple French, and suitable texts and selected passages read to illustrate them, read as the Board specifies: "With regard not to philological and grammatical detail, but to their substance and meaning, and to the most important characteristics of the author's style."

B. The second principle that appears to be essential is that somehow or other we should make the student realize the great importance and value of having a second language to draw upon for educational method, especially with regard to points that affect language teaching. In this respect, I find there is a vast storehouse of information practically unsuspected and untouched by the average student. All the time is spent in learning to write and translate the language indifferently well. French has yielded, virtually, nothing. Yet how helpful some knowledge of French methods of teaching composition might be! Indeed, it is almost necessary. We give a good deal of it second-hand in our method lectures, and read it transformed (not always for the better) in the texts books on method that we use.

I believe my dream generally lasts long enough for me to see more French students taking advantage of the excellent legislation in Appendices J (1) and (2) i.e., spending third years or deferred third years at the Guilde Internationale or in a French Training College. I see them becoming appreciative and yet soundly critical of an alien culture; learning, too, the toleration and deeper sympathy that comes perhaps only through wider experience and culture. Then I think they come back to find that there are many openings for them in the Elementary Schools of a new type that are everywhere springing up.

When I wake I still feel convinced that without unduly infringing upon the rights and privileges of the increasing number of universities, there is a future that justifies the continued teaching of French and other foreign languages in Training Colleges, but I should very much like that future to be prepared for by the speedy introduction of a revised French syllabus.

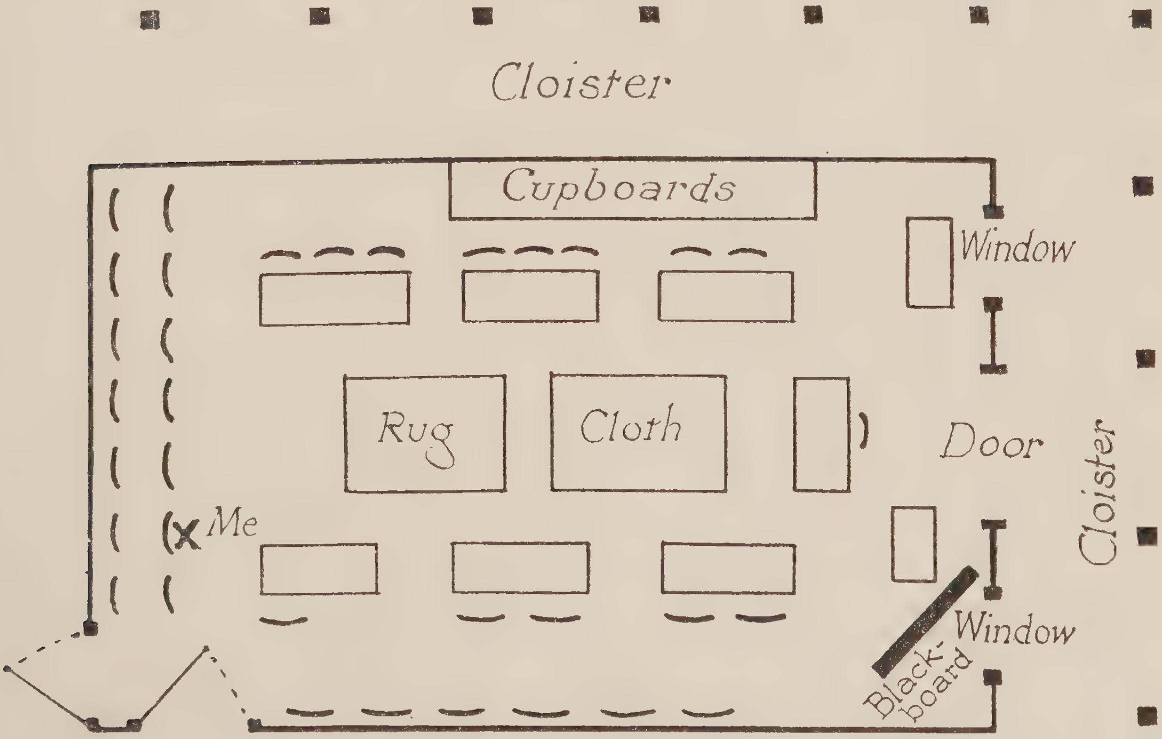
THE MONTESSORI SCHOOLS IN ROME.[1]

I.—CASA DEI BAMBINI, VIA GUISTI, 12.

12 June, 1913.

ADMITTED by a white-habited Franciscan nun, about a dozen women (English and American) were ushered into a little chapel; its walls light blue, its vaulted roof also painted blue, set with golden stars, and there were golden *Fleur de lys* on the walls of the Sanctuary. Over the nearer of the tri-form arches was written *Deus Meus et Omnia;* over the next, "*Diligatis invicim sicut dilixi vos*"*;* and over the Altar, "*Agnus Dei qui tollis peccata, mundi dona nobis pacem.*" Presently a little five-year-old maiden tripped in, a real little Italian in a grey cotton frock and with dark hair at her neck. She whispered something to the lady sitting nearest her, but this only filled the lady with embarrassment, and produced no other result. But a kindly Sister who could speak English was just behind, ready for emergencies, and said, "The bambina was telling you that the young ladies can come to school."

School was a big room with a large window on either side of a door, opening into a garden cloister on the east side. The tables and chairs were arranged like this:—



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[1] These letters, which are printed as they were received from my friend, Miss G. E. Edwards, Head Mistress of St. Michael's Girls School, Bloemfontein, gave such a vivid personal impression of the Montessori Schools in Rome that I thought they might be found of general interest.
C. G. LUARD, Whitelands College, Chelsea.

The little tables were very strong and very steady; so were the 35 little chairs—the seats made of slats. The floor was of that nice grey composition stuff you get in Italy. One cloth was on it at 10 o'clock, the rug was added later, by request. On the walls were two Franciscan inscriptions illuminated, with a general effect of white lilies and pale blue. On one, "*Ed io vi dico che la Vergine Santissima ha una missione delle Francescane Missionarie di Maria*" ("And I say unto you that the Blessed Virgin has a Mission of the Franciscan Missionary Sisters of Mary"; and on the other, "*Le Francescane Missionarie di Maria in onore di Lei l'edificarono in questo luogo*" ("The Franciscan Missionary Sisters of Mary in honour of Her have built it in this place.")

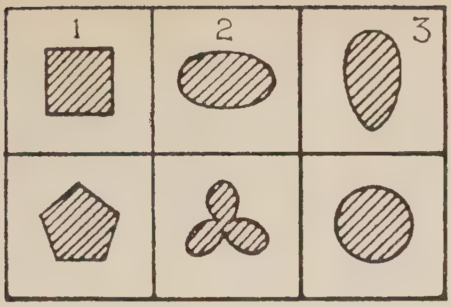
Two of the Sisters seemed to be the chief instructresses, one . . . Isabella, was in great request, and so was an oldish mistress, a laywoman, who was hailed gleefully, "Signorina, Signorina!" when she first came in. There were three other lay people, possibly students, whose only business seemed to be to stand about.

The visitors were ranged round the walls, in obedience to the request printed on the back of the *carta di permesso*, "*Si prega di stare seduti e in silenzio*" ("Please remain seated and silent!") But the pleasant hum of conversation that arose from the bambini prevented one feeling constrained to sit mute. Next to me were two Americans, who were very pleasant. One told me that very good articles on the Montessori method had come out in *McClure's Magazine*, beginning May, 1911. She said that hundreds of teachers had come from America to study the method and that it was being carried out in some schools, but that it was not quick enough for the public schools where so much had to be packed into the years at school. The great expense of the apparatus was more. too, than the authorities could countenance. At the same time there was very much that was admirable in it, though of course all that we saw this morning was "just kindergarten."

This Casa dei Bambini in the Via Guisti can take in 25 children; there were 15 there this morning. When we went in, one little girl stood as hostess to shake hands and say, "*Buon' giorno*." Five or six others came round and shook hands, too, in their charming Italian way. None were more than six years old, the youngest were three. They were all little *Romani*, evidently from quite poor homes, but all spotlessly clean. This is what they were all doing when we were ushered in:—

1. Girl......Sorting silks, according to shade of colour.
2&3. Girls ....Doing buttonhook practice—the frames about 18in. long.
4. Girl......Sorting letters, 2 or 3in. high, all in writing script.
5. Girl......Sorting silks.
6. Girl......Playing with letters or figures.
7. Boy......Chalking on slate.
8&9. Girls ....Chalking on slate.
10. Boy......Sorting silks.
11. Girl......Playing with letters.
12. Girl......Arranging letters in words, "*roma, fuora*."
13. Boy......Writing in chalk (standing on chair) on the blackboard, "*roma, a giovedi, tecla, maia*."
14. Boy......Counting.
15. Girl......Arranging cylinders in frame.

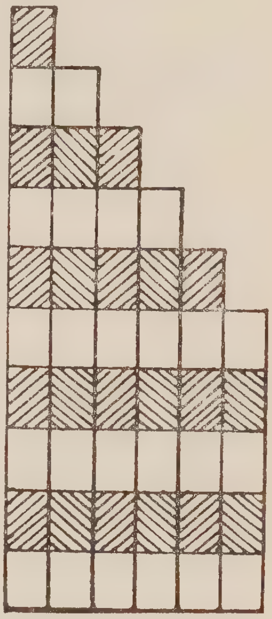
No child was anything but perfectly free to do his work, to leave it, or to choose something else. But not one that I saw stopped any little business he was engaged in until he had finished it. One little girl later on chose geometrical insets. This is a frame with movable pieces of wood, each with a little knob; they fit into cut-out spaces in each section. All the pieces are turned out, the thing is to get them back. This is quite easy when you can see, but this little girl soon asked to be blindfolded. She took up a piece, felt round it, it was a square, felt the square hole



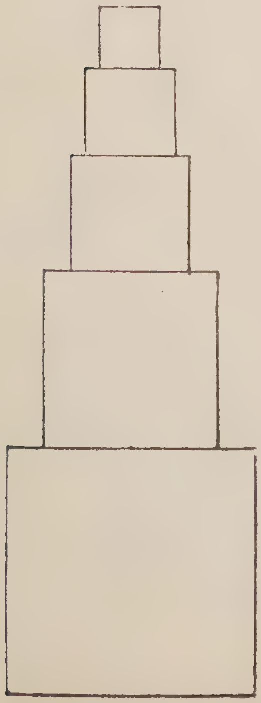
in the frame, and soon fixed in the piece. Then she took up the oval (No. 3 shape). Five times she felt it over, five times she felt round hole No. 2, five times she tried in vain to fit it in. Never a bit cross or tired, just indefatigable. Then she had the happy thought of trying hole No. 3.. But so difficult is it to fit an oval shape into an oval space that even here she had four tries, feeling round first the shape and then the space before every attempt, until at last she got it in. The other three were soon settled. You can judge of the furious activity of the children if I tell you what No. 1—I will call her *Prima*—got done in an hour. First she sat at a table and sorted silks. You have eight colours and eight shades of each colour; you sort out the shades of colour one at a time. She put her darkest so very near the right-hand edge of the table that when she came to arranging the last two colours on the reverse system, three of the darkest shades tumbled off, but she only laughed, picked them up, and got them just right.

Then she fetched wooden spills in a partitioned box, with numbers 1 to 10 over each partition. You empty out all the spills and count them back, putting the right number in each section.

Then she got sandpaper numbers and black ones, and arranged those, and counters of the right number. After this she asked for a rug, which was placed on the floor, and arranged the long sticks painted red and blue, doing it with extreme care, quite evenly, and so that stripes of red and blue came horizontally. Then she arranged the right numbers by them, and then got counters to match. When she was bringing the counters for her first operations on the table a rather pretty incident happened. She dropped the whole boxful on the floor. Instantly five others rushed to pick them up for her, making a kind of race of it until every one was in. Then they returned to private business. But you have not heard the last of *Prima*. After this she took up her position at another table (I knew her because she wore white garters on her long black socks), and set to work to sort materials, bits of stuff about a foot square. Then she got a Sister to come and test her, with her eyes squeezed tight shut. Then she worked with chalk on a slate, then sorted letters; finally put every single thing away. The putting away of constructed work was left till eleven o'clock, so that the room was like an exhibition by the end of the time. But nobody seemed to get praise, any more than blame.



A small boy, I will call him *Decimo*, had an interesting morning. When he had finished sorting his silks he called for the "long stair blocks" to be put on the floor. I thought he was never going to do anything with them, but the finished staircase appeared quite suddenly in the end. Then he built the tower, ten cubes arranged one on the top of the other. But his real moment came later on.



But first I must tell you something about the end of the morning. You saw the Sister writing something on the board,[1] "Silenzio." One by one the children saw it too, left off their work, sat more or less still, some rigid, one swinging her legs. The Sister whispered "Silenzio" very slowly once or twice, then folded her hands, the children folded theirs, some put them over their face and shut their eyes, and I should think they said a little prayer. Presently, very softly, the Sister whispered a name, "Fortuna!" Fortuna tip-toed, like a mouse, to her side. Then "Enrico!" "Sita!" until they were all called up. Then she whispered something to them and nearly all ran out into the cloister and the garden. First they ran a few races up to the Sister and back again, and then they played by themselves, racing round and round the flower beds, but never screaming or making an unbearable noise. We went out too, and talked to one another or to one of the elder sisters, who spoke French and knew all about the method. I do wish I had thought of asking her how much she believed in it, but that crucial question only occurred to me just now.

Then we looked inside, and there were four of these infants busy setting the tables. Tables were covered with white American cloth, then set with a big white plate and a soup plate on the top, a spoon and fork and a glass for each one, and a big water bottle on each table. Gradually about twelve of the children came in, and all joined in a grace. Then came the great moment for *Decimo*. He and a small girl were both equipped with large white aprons hanging far below their diminutive tunics, and to them was allotted the proud privilege of staggering round with stupendous soup-tureens, out of which stuck Gargantuan ladles. The children helped themselves, took as much or in some cases as little as they liked, and sometimes the waiter *Decimo* did the helping. Then the soup plates were cleared away by the children, and the baskets that had been arranged in a row on the central table were given round. Of course all of you who have read a Montessori book know that large dinner napkins were worn, and tucked in at the neck by the wearer. But what struck me more was that they all most carefully folded them up afterwards, sometimes going to a spare table to accomplish it, and even succeeded in getting them into the very tight rings. Then came the next course, hunches of bread and sometimes a slab of meat or some slices of sausages; nearly always cherries. These were carefully washed in the tumblers, and I think the general intention was not to swallow the stones. When they had finished they all joined in another grace, and then cleared the tables; a few put themselves into dark blue aprons preparatory to washing up. We saw them at their little tubs that stood in the cloak-room before we came away at about 12.15.

It was all curiously interesting, and the one thing of all the wonders of Rome that I have felt I really *must* write about. I won't attempt any theorizing; I will only say that I overheard a very expert-looking Englishman among the visitors muttering something about the "dogmatic bigotry of England." G.E.E.

II.—SCUOLA FEMINILE, PORTA TRIONFALE.

17 June, 1913.

THE Casa dei Bambini at Porta Trionfale is a very different affair from that in the Franciscan Convent in Via Guisti. There the conditions were so ideal and the results so perfect that a captious mind was tempted to wonder whether it might not be the conditions rather than the methods that were really responsible for the results. All doubt on this score was set at rest by our visit to Porta Trionfale. This is the new quarter of Rome that has been developed on the right bank of the Tiber to the north of the Vatican. Broad, tree-planted streets, with tall well-built white houses of flats, all on the most approved system of town-planning, show that modern Italy means to hold her own with Germany, and, I am inclined to think, to win with hands down.

The sunny corner of one of the broadest of these rectangular block of buildings is given up to a large three-storied Government School for Girls. Here on the ground floor we found the Casa dei Bambini that had only been opened two months before. It was a large room with an arch in the middle; in one half were fifteen little solid white tables, of five different heights (ignored by the children), with two little solid white chairs at each; the walls were light grey (with three Andrea della Robbia bambini on coloured plaques), and festooned holland blinds were drawn down at the windows to keep out the sun. There were little slate blackboards, in white frames about 5ft. by 1½ft., round the walls. Children were walking about or sitting still when we got there at about ten o'clock; there was an air of beginning, but nothing seemed to be begun. In the other half of the room there were felt rugs on the composition floor, and jolly big white cabinets against the walls, and a piano in one of the angles by the arch. Children were amusing themselves in the other room. The *direttrice* here was the charming fine-faced Signorina Cairoli, who gave us the *carta di permesso*. She had an Italian lady as assistant, and as casual helpers a girl who seemed to be German, and a tall

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[1] Once before she wrote, "*Tecla è piccola, ma crescerà*," ("Tecla is little, but she will grow").

bearded young Englishman (Mr. Claremont I was afterwards told he was). First of all the children were set to march and then to run round the room for three or four minutes, then after a certain amount of settling down, accomplished by the children more or less on their own initiative, Antonita and Lina were detailed to fetch out the frames with the buttonholes, laces, hooks, &c. They staggered back with loads nearly as big as themselves, and dealt them out to the smaller children. Other children got other things, until very soon everybody had his own bit of apparatus. These children seemed to be poorer than those in the Via Guisti ; they were all clean and tidy but they were not so trim, and their hair was not so well brushed. Some were *very* tiny, and seemed to be hardly three years old. What one is disposed to think of as "human nature" was more apparent here than in the Via Giusti. There was a tendency for Alessandro to prefer Vittorio's apparatus to his own, and for Lisa to interfere with Nita's silk sorting. Nello did not seem instantly to be seized with absorbing interest in his blocks, or Alfredo in his bows. But the cloud would not be there for more than a minute. The Signorina would whisper something to Alessandro and perhaps change his apparatus, Lisa would be told how *very* busy Nita was and that she must not be disturbed, Nello might be transported to another part of the room where his apparatus appeared to present itself in a more attractive light, Alfredo would have it pointed out that there are various stages in bow-tying, and he could take one at a time. By degrees, with no thwarting and no compulsion, every single child was doing its little job with all its might ; and Alfredo was taking his row of twisted ribbons round for the others to admire. Some of them did the same thing over and over again. Some of them invented one fresh little plan after another for using the same apparatus, e.g., coloured silks arranged downwards, sideways, and upwards in a little tower, then in two towers, then in fours upon end. The adorable, dark-eyed, curly-haired Antonita near us was busy with the silks first of all, then she put these away and fetched the single letters, about three or four inches high, in dark sandpaper on white card (l h b, o a e, i u, q g, d t, p m n, c r v, s z). These she traced over and over with her finger till she could do it as quickly as you could write. "But how if she begins in the wrong place?" Well, she *did* with the g. She made the j stroke first and then tried to fit in the o part. But after one or two experiments in this direction she soon hit on the authorized method, which she promptly adopted. She told us the sound of each too as she made them. Another little person near us fetched a set of written words, "*il vaso*," "*colore rosa*," "*il cubo*," &c. Then she collected all the objects answering to the written description, and got the Signorina to see if she had them right. We thought this a rather laborious diversion, but I believe it is one the children very much like.

All this went on for about an hour and a half I should think. Then the Silenzio period began to take place. Some of the children grasped the idea at once and sat like statues, others needed an admonishing prod from a neighbour or a whisper from the Signorina to get them quiet, but at last the whole room was still, except for a stray pair of very short legs swinging to and fro here and there. Then the Signorina took fate into her own hands, and after a searching glance round the room shut her eyes and covered them with her fingers. I felt that this, if anything, was a venture of faith, but like other ventures of faith it was amply rewarded. Not a movement, not a sound except the trams banging up and down outside. It is true there was not the extraordinary sense of prayer that you got in the Via Guisti, but this at any rate meant the possibility of it. Then slowly the Signorina uncovered her face and silently tip-toed to the opposite end of the room at the back of all the children. Then she called them with a whisper so low, it hardly seemed conceivable that they should hear it, "Ettore!" But Ettore heard, dismounted noiselessly from his chair, set it back noiselessly under the table, and tip-toed as quietly as his thick little boots would let him, to take up his position beside the Signorina. "Lisa!" "Fernando!" "Niccolino!" One after another, or two and two, perhaps hand in hand, up they came, until at last they were all gathered in a long row by the Signorina. And all this time not a syllable was spoken. It was an extraordinary piece of willing effort, as till now the hum of conversation had never ceased, for who is articulate if not the Italian? But suddenly from the hidden side of the archway came the sound of music, and in two minutes all the thirty or forty children were singing and dancing in the open half of the room. This went on for some little time, then the children, fetched by big brothers or sisters, began to go; the others settled down to draw with coloured chalk, filling up shapes or printed patterns or drawings of flowers, &c., entirely according to their own idea. When the colouring was finished the Signorina wrote in the child's name and the date. I thought the drawings might have been truer to life, and more graceful; the patterns were the kind of thing that seems to evolve itself in anybody's hands when you work on chequered paper. But nothing could exceed the zeal of the infant artists. As this School is a quite different institution from the Franciscan Convent there could not be the school dinner that we saw there. So this was the end of the morning, and by this time it was about 12.15.

We took occasion to have a talk with Mr. Claremont. He had been studying the system and the schools for some months. He hopes to have a school in England himself, not necessarily for infants, but he believes you can't do better than begin at the beginning. He said he knew very little about the Frœbel method, but that the Dottoressa claimed to have discovered a new science rather than a new system of education—the science, I suppose, of child-study. He told us that the great difference the Montessori system made was one of discipline, that this did not depend on the age of the child, but on the length of time it had been in a Montessori School; that the Dottoressa is carrying on classes for older children and that the results she gets are so extraordinarily good as to lead one to imagine that the children would be ready for University work by the time they were fifteen; I suppose their individuality and their reasoning powers would be so developed, and remembering that the Italian matures young, I can well imagine it. Another thing Mr. Claremont told us was that absolutely no pressure is brought to bear upon a child to make it work. A certain small boy did nothing, absolutely nothing, for a year. Then he corrected a small neighbour who had made a mistake in sorting silks, and in a week he was writing and reading. Now he is one of the leaders of his class. Apparent indifference is not to be taken as evidence that the brain is not working, on the contrary, the very reverse would appear to be the case. (This reminds me how an American, Mr. C. O. Rogers, told me the Waterman Fountain Pen was invented by a man who had been divorced by his wife because he would sit under a tree and do nothing, while she starved. He was working out his idea.)

Eighty students from all over the world attended the course of training given by the Dottoressa from February to May. Another course will be held in the autumn, though the exact date is not fixed, but information can be had from the Dottoressa, 5 Via Principessa Clothilde, Rome, or from the Montessori Society, 90 Buckingham Palace Road, S.W.; but the Dottoressa's Secretary does not properly understand English, so it is better to write in Italian or French. The methods of conducting what must be a huge correspondence are not very businesslike, so that plenty of time must be allowed. But who can insist that the Dottoressa shall run a large business concern at her own expense when she has given up her medical work to make these unpaid educational experiments? And one cannot grumble that the *carta di permesso* for the schools, without which there is no admission, is slow in coming when one is asked to pay nothing at all for it. But I feel quite sure that this movement cannot be judged only from the book alone, and it certainly should not be condemned on preconceived theories, that it dispenses with discipline, &c. On the contrary, the discipline and the atmosphere of work that arises out of utilizing the child's inherent instincts is one of the salient features in actual fact. That there are many others can be seen by anyone able to read between the lines of this little record, made from notes taken at the time.

G. E. Edwards.

R.M.S. "Edinburgh Castle," 4th July, 1913.

A MOTHER'S STORIES TO HER CHILD.

By Isa B. Boyd.

My first experiences in story-telling were acquired in telling stories for a number of years to large classes of young children. But for the last three years my class has only had one pupil in it—my own little girl, now aged 4½. When I was a teacher, I thought I knew rather well the kind of story children like, and the way in which they like it told. Lately, however, I have been learning a great deal from the outspoken criticism of my present pupil, and from a careful observation of the after-effects of the stories I have told. With a class it was a story of a strong, almost sensational type that appealed most, and gave the best results in composition work. Now I find, when dealing with my little girl, that the impression made by this kind of story is too deep to be healthy. The emotional stirrings which in the case of the class seemed to be quickly dissipated by the lessons and the play that followed are in her case dangerously tenacious. In the absence of fellow-feeling and the speedy diversion of the mind to other subjects, the child does not get readily away from an emotional story. She thinks about it and discusses it until the emotion, which is quite innocuous when temporary, gets an almost morbid fixity.

This made it necessary for me to think of changing the kind of stories I told her. At first I made use of the tales which had been favourites with my classes—tales like "Red Riding Hood," "Cinderella," "The Three Bears," "Androcles," &c.—until I found that even in those which were not over-stimulating in an emotional way there were essential points beyond her comprehension. As an experiment I tried stories with a strong domestic interest, woven around some every-day action in ordinary life, and found them amazingly successful. I must confess that when teaching I rather despised the story of Tommy at the breakfast table inquiring where everything came from. Now I was astonished to find myself telling stories of the same type to an audience unmistakably appreciative. I gradually evolved a whole series of stories about common articles of food such as milk, bread, butter, &c.—all with a central character called Mary, the little daughter of a farmer, who was supposed to be about the same age as my child, or a little older, and who showed a lively interest in the origins of things. The Mary saga began about two years ago, and has continued intermittently to the present time. Mary in the meantime has advanced in years, and become the Mary with the Little Lamb, and is the heroine in quite a considerable number of incidents, chiefly of a seasonal character.

About six months ago I found myself embarked on a new series of moral tales constructed round the character of an extremely angelic child named Maisie, who is a model of all the infantile virtues. Maisie has the advantage over Mary in being twelve years old, and able to do a great many things that Mary is not old enough to do. Moreover, she has two brothers and a number of cousins and friends, and the stories consequently bring in all the complications of a child's social relations. Probably for these reasons, Maisie is even more of a favourite than Mary, and her influence on the mind of the little one is correspondingly greater. Maisie is loved and imitated by her, and is even imagined to be present at times as a playfellow. The constant demand for Maisie stories gives opportunity for an indirect but very effective moral instruction. The example they suggest is unconsciously and even sometimes consciously followed in matters of conduct. More striking still is their influence on the imagination. They do not stimulate it to excess as the folk-stories did, but they feed it generously. Quite often after a story has been told the child proceeds to act it all again, with herself in the rôle of Maisie.

The best way to illustrate the manner of the story-telling, and to show its effects, is to give one of the stories as told, with the little one's comments on it, and an account of the after-play. The particular story I reproduce here was narrated one wet afternoon, and followed on another story of the series. My husband sat at a desk just behind us, and recorded all that was said in shorthand. The story, it should be added, had been told several times before in one form or another. Here it is, slightly abridged :—

"When Maisie went back to school after the holidays, all the girls were feeling rather unwilling to work. But they had a very nice, wise teacher, who thought of a good plan to make them willing to work. She said : 'I have a lovely box of paints.'—(*Child :* 'She should not have told them what the prize was')—'It is a prize to be given to the girl who paints some flowers best.' When the girls got out of school, they all began to talk of this lovely prize. Some of them were quite sure that they would win it, but Maisie did not boast. She said to herself : 'I must try hard to get that prize. If only I get it, I could give Kenneth (her brother) my other box of paints.' So when Maisie got home she told her mother about it, and said she intended to try for the prize ; and mother said : 'Certainly, Maisie, you must do your best.' That afternoon she went into the garden, and she picked the two prettiest pansies she could find'—(*C.* 'And a little bud')—and a little bud with a leaf on it. And she set to work—(*C.* 'Day after day')—and painted a picture of the pretty flowers of the pansy, and made them exactly the shape and the size of the beautiful pansies she had. When she showed it to her father, he said it was very good, but she must work harder. So she worked hard every night and every morning painting the lovely purple pansies. At last it came to Friday.—(*C.*, anticipating : 'Tell me when it was spoiled one day.')—The painting was to be given in on Monday. On Friday morning Maisie was up early, working hard at it. When she came down to breakfast, she said to her mother : 'Will you see that Kenneth does not get into my room, mother, because I have left my painting wet on my table.'—(*C.* 'Tell me about her mother shutting the door when pussy wanted to go in.')—Mother said : 'I will tell Kenneth. He is very obedient, and will not go upstairs when I tell him not to go.' But though Kenneth did not go, someone else did. In the forenoon, pussy walked into his little mistress's bedroom. It was nice and warm there, and he basked in the sunshine near the painting. But soon he heard a loud hum, and he wondered what it could be. He looked round about, and saw a wasp.—(*C.* 'Yes.')—It had come sailing in through the open window, and now it went straight to Maisie's flowers.—(*C.* 'Why? Could it not see they were on paper?')—It flew round about them slowly, and then it alighted on the one that had been painted that very morning, and was still wet. Pussy did not know about the painting. He only saw a strange little moving thing, and thought he would like to play with it. He crept up slowly, and stretched out his paw. Before he knew what had happened the paw was stung. The sudden pain made him clutch wildly at the wasp, and in a second the precious painting was completely ruined. Pussy went rushing madly round the room.—(*C.* 'Why did he not go out of the room?')—He was too full of pain to know what he was doing. Maisie's mother came running upstairs to see what all the noise was about, and found pussy crying 'me-ow, me-ow,' most pitifully. She made him—(*C.* 'Put his paw up')—and she took out the sting. Then she saw the painting all spoiled, and she said, 'What will poor Maisie say?' After soothing pussy's paws, she threw the dead wasp out.—(*C.* 'How did it sting when it was dead?')—Pussy had killed it. When Maisie came home from school, feeling rather happy because her painting was nearly finished, she saw from her mother's face that something was wrong. Mother told her that pussy had quite destroyed her painting. 'Pussy! destroyed my painting!' she said. 'How did he do that?' Her mother explained it all. Maisie ran upstairs to see what had happened, and came downstairs nearly in tears ; but she was twelve years old, and she did not cry. She only said, 'Poor little pussy! Did you get hurt in trying to save my picture? You did not mean to do any harm.'—(*C.* 'It just meant to kill the naughty wasp.')—So she said to her mother: 'I must begin another picture to-night, and perhaps I shall be able to finish it before Monday.'—(*C.* 'She had other pansies, of course.')—She went out and picked two other pansies.—(*C.* 'And a little bud on one; and after she had painted the little bud, she would put it in water.')—She worked very hard—(*C.* 'Very hard!')—and next morning she got up early to get on with it.—(*C.* 'How early?')—She worked all day at it, and her mother excused her from any housework.—(*C.* 'Of course, the two boys would help.')—When night came, she had only a little bit to do to one of the leaves, and she finished that on Monday morning. How pretty it looked! It was far better than the first painting had been. Mother and father said that if she left it at the window this time, half-a-dozen wasps would come to it. When she took it to school, all the girls said it was the most beautiful painting of pansies they had seen, and the teacher gave the prize to Maisie."

The completion of the story found the little hearer eager to turn what she had heard into some kind of play, but not very clear what to do, so many were the impulses to action. Her first request was for a pencil—an unusual request for her, as she is not fond of drawing on paper. "Give me a pencil and a paper, and I will draw a pansy myself." As soon as she had got these articles, a better idea seemed to strike her. "Mother," she said, "will I be Maisie?" I assented; but even now another possibility presented itself to her. "My finger will be the wasp," she said, "and you will be the pussy." I gave this game no encouragement, and it dropped for the time being, only to revive the next morning after breakfast, this time with herself as pussy and my finger as wasp. The wasp game being set aside, she returned to the acting of Maisie. "Wait till I draw the pansy, and the second time I will draw a better one." Then she went back a step, saying: "Tell Kenneth not to come up into my room, and shut the door. Pussy might come up and spoil my painting. If a wasp was crawling on it, he might put his paw on it."

At this point the entry of the maid into the room made a temporary interruption, and she wandered off to the kitchen with pencil and paper in hand. Then snatches of her conversation in her shrill, penetrating voice showed that the play was going on. We listened, and this is what we heard her say to the maid: "I am to be Maisie playing at school, and you are to be the wise teacher. You are to give us a box of paints." Then a spell of silence, after which we heard her issuing more instructions: "I am to be the wise teacher, and you are to be one of the girls saying you are not going to do any work to-day. . . . 'I have got a lovely box of paints for the one that can draw the best flower.'" Someone then seems to have asked where the box of paints was. The answer, which was all we heard, was: "Oh, they are imaginary!"

Ten minutes later she returned in triumph with three flowers which she had drawn on the paper. All three were about the size of pansies, though only one of them had any resemblance to the pansy shape. But considering that she had not drawn much before (except on the dust or the sand), and that most of her previous efforts had been human figures, we were quite pleased that she seemed to have discovered a new kind of subject for her art as a result of the story she had heard.

The next morning she got paper and pencil again, and proposed to draw more pansies. I suggested that she should be like Maisie, and get a pansy from the garden to draw from. She did so, and proceeded to draw one pansy after another. As a rule she tires easily of work that calls for a special effort, but this time there was an unusual perseverance. She said to herself, and to me: "I must try, and try again, like Maisie."

REVIEWS.

Vives on Education: A Translation of the *De Tradendis Disciplinis* of Juan Luis Vives, together with an Introduction by Foster Watson, D.Lit., Professor of Education in the University College of Wales, Aberystwyth. Cambridge University Press. (pp. clvii + 328.) Price 5/- net.

ALL students of the history of education recognize the magnitude of the debt they owe to Professor Watson. In nothing is that debt greater than in making accessible to the English reader some of the works of the greatest Renaissance writer on education. Already he has given us versions of the Colloquies (*Tudor School-boy Life*), and of several short treatises on the education of girls. Now comes this most readable rendering of the second and constructive part of the *de Disciplinis*. It remains for him now to complete his services to the cause by giving us the first part—the *de Causis Corruptarum Artium*—in which Vives critically examines the actual state of things scholastic in his day; and the chief parts at least of the *de Anima*, in which he sets forth the psychology which underlies all his teaching on education. To know what Vives himself esteemed true is good, for that is to know the best thought of the early sixteenth century. But to have a contemporary picture from so competent a hand of the existing condition of education would be of yet greater value and interest to the student of the past, and would, of necessity, give greater force to the proposals for reform, and guard against the error, so easily made unconsciously, of judging the constructive work by the standards of our own day rather than by those of that in which they were written. Again, it would be good to know more definitely what psychology of education Vives taught. We have some indications of it here on pp. 34-35, 59, 75-80, 124-125; and on page 211 we read: "The study of a man's soul exercises a most helpful influence on all kinds of knowledge," while on p. 251 this knowledge is declared to be necessary for the wise conduct of life: "the whole man must be understood, from within and without.''

In no way could we more strongly express our appreciation of what Professor Watson has given us than by pressing this urgent plea for yet more from the same treasure-house.

In an excellent introduction of some hundred and forty pages, Professor Watson gives us a sketch of the life of Vives, and a critical examination of the chief elements in his teaching on education. He asks—but leaves his readers to answer—the question whether Vives or Erasmus were the greater thinker on education. There can, we conceive, be no doubt as to the answer. Erasmus was more in men's eyes, and his direct influence was greater. But that Vives saw into the heart and meaning of education further than Erasmus is brought home to one forcibly by a comparison of the book before us with the treatises on education by Erasmus of which Mr. Woodward, some nine years ago, gave us a translation. Nor was the indirect influence of Vives small. His works were a mine from which succeeding writers extracted much pure gold of thought—generally without acknowledgment. This also Professor Watson makes clear in the Introduction.

We spoke above of the natural tendency to judge a writer by our own standards. In his conception of the means of education Vives will not, of course, square with our foot-rule. The learning of Latin is with him the first essential, and is to occupy the boy till the age of fifteen. But that is only to acquire skill in using the tool, for "no language is in itself worth the trouble of learning, if nothing is to be sought beyond the linguistic aspect." Four hundred years after Vives the lesson is still unlearned. So, surely Professor Watson is right in regarding his fundamental views as essentially modern. In this respect, indeed, they are more modern than ourselves. The note of practical use runs throughout all. ''We ought, therefore, not always to be studying, but our study must be attuned to practical usefulness in life.'' Of course, this was the teaching of the Italian Humanists a century before Vives, just as truly as it was that of Herbert Spencer in the nineteenth century. It is not the principle which changes, but the means through which the principle is made effective.

But, besides this general principle, there is much in Vives which has been often attributed as original to later writers. One may compare the comparison of various forms of ability on pp. 75-80, for example, with Ascham or with Wotton. One notes how freely the great distinction between practical and intellectual ability is granted (pp. 77-78), and one regrets that for four hundred years the distinction has been ignored in education. But one could go on for pages pointing out how this old advocate of an almost encyclopædic learning, based on the traditional Seven Liberal Arts, yet looked out on the scholastic world with unclouded eyes, and saw clearly the lines on which advance was to be made. Before Francis Bacon he saw the nature and value of induction, and he saw it more truly. Before Rousseau he saw the need of studying those whom we would teach, and he both saw it more clearly and gave help to educators how to do it, not resting content with the rhetorical platitude, "Study the child, for it is certain you do not understand him."

The theme of Vives is a most tempting one, but enough has, we hope, been said to send the reader to the rich and well-served feast Professor Watson has spread before him. To introduce the fly into the amber we will, in conclusion, beg Professor Watson, when a new edition is called for, to pronounce a decree for the restoration of conjugal rights between the infinitives he has so grievously divorced on pp. 8 and 213.

J. WELTON.

A Text-book in the History of Modern Elementary Education, with Emphasis on School Practice in Relation to Social Conditions. By S. C. Parker, Associate Professor of Education and Dean of the College of Education in the University of Chicago. (pp. xxiv + 505.) Ginn & Co. 6/6.

MR. PARKER'S aim, as set forth in this somewhat cumbrous title, is a good one, but, unhappily, the book fails to make evident his qualifications to carry it out. Its most striking characteristic is its derivation from the books given at the ends of the chapters under the heading "Bibliographical Notes." These are nearly all secondary authorities, and not a few of them of second rate value. The writer of this text-book shows no knowledge outside this limited range, and in places seems not to be altogether at home within it. As might be expected, his work is best when he is dealing with American schools, though even there he fails to present a clear view of their development.

By "elementary schools" Mr. Parker means all vernacular schools for children under fourteen or fifteen years of age. After stating this in the first chapter, he gives us a sketch of many irrelevant matters, such as a catalogue of German migrations (p. 9) of "notable conversions" (p. 11), the mediæval "Tower of Knowledge," and the kinds of Latin schools in England (from Mr. Leach). Here we have incidentally a sign of our author's quality as a historian, in the giving of "The Merchant Taylors' School of London"—which was founded in 1561, with so well-known a man as Richard Mulcaster as the first High Master—as an example of a mediæval guild school. Similar signs may be found elsewhere, as at p. 25, where we read of "the bishop of the cathedral in Exeter;" "Luther was an Augustinian monk" (p. 38); "in England, toleration was the rule of Elizabeth" (p. 124); the Lancasterian Institution was constituted by "a number of Quakers" (p. 230); "Mrs. Trimmer persuaded Dr. Andrew Bell . . . . to become active in the organization of schools to rival those of Lancaster" (p. 232). On p. 233 comes a passage from Manderville's *Essay on Charity Schools*—copied at second-hand from Adams' *History of the Elementary School Contest in England*—for which Mr. Parker tells us he has "not been able to find a date"—nor apparently an author, or he could hardly have quoted it as an expression of common English opinion a century after it was written.

The leading principle of arrangement in the book is the development of State control over schools, which is rather inconveniently styled "secularization," though the general tone of the narrative shows that the "secular" school, in the usual acceptation of the term, is the author's ideal. Under this arrangement we have the early nineteenth century in England both in chapter V and in chapter XI, and, between these two, chapters on Locke, Rousseau, and Prussian schools in the eighteenth century. The last 220 pages are given to Pestalozzi, Herbart, and Frœbel, and their influence on American schools.

Despite the author's declared intention to concentrate his efforts on typical movements and individuals, we cannot accept this as a "history of elementary education." To such a history this book contributes chapters—though in essence they have all been written before. But a general review of the world-wide movement, "with emphasis on school practice in relation to Social Conditions," it does not give. Nor is this compensated by originality or depth of criticism of the four writers to whom half the book is given. This is specially weak in the case of Pestalozzi, with whose writings Mr. Parker seems to have but small acquaintance. But perhaps the writer has deliberately kept himself from anything involving philosophic insight. From p. 113 we gather that he is writing for a class of students to whom Newton, Descartes, and Leibniz "are but names." If this is the case with "the ordinary normal-school or college student" in America, to whom the book is addressed, then doubtless such self-limitation is wise. But it must be borne in mind by the less "ordinary" reader.

There are two unfortunate misprints on p. 282, where Bodmer appears as Bodemer, and the dates given make him die at five years old, though he "taught history and politics for fifty years." Of course, such things will happen, but it is sad when they occur in a chapter at the end of which the author laments the presence of "typographical errors, often in dates" (p. 303) in another man's book.
J. WELTON.

Backward and Feeble-minded Children, by Edmund B. Huey, Warwick and York, Mc., Baltimore. M.D., 1912. (221 pp.) $1·40.

A Syllabus for the Clinical Examination of Children, By Edmund B. Huey. 35c.

A Set of Six Record Blanks for Use in the Examination of Defective Children, by Edmund B. Huey. 25c.; $2·25 per 100; $16·00 per 1000.

FOLLOWING the lead of the New Jersey Training School, established under Dr. Goddard at Vineland, the Lincoln State School and Colony, Illinois, founded a psychological department. Dr. Huey was put in charge, and at once set himself three tasks. The volume he has recently published presents the result of his work during eighteen months.

He first set himself to classify the membership of the institution. The Lincoln Colony is one of the largest State Institutions for the Feebleminded in America. To begin with, therefore, he confined himself to the admissions alone. One hundred and forty cases were admitted in the course of a single year. These he takes as representative of the 1300 inmates in the entire institution. Following for the most part the recommendations of the American Association for the Study of the Feebleminded (Lincoln, 1910), he classifies and tabulates these cases, first, according to the degree of mental defect which they exhibit (33 idiots, 59 imbeciles, 48 morons) and then according to the pathological variety to which they appear to belong (1 cretin, 6 mongols, 18 cases of meniugitis, 31 epileptics, 59 cases of convulsions, and so forth).

Secondly, he undertook to formulate methods of case-study and to elaborate a set of suitable research tests for the chief functions affected in mental defect. He has, accordingly drawn up a syllabus for the home record, the school record, the physical and medical examination, and the mental examination of each child. The mental examination blanks comprise the Binet scale and an unstandardized "point-scale" devised by Dr. Huey himself. Blanks for these records and examinations have (with some modification) been published separately. His primary reason for so doing is the following: "If teachers, social workers, and others who send or bring cases to examiners are made to know the classes of facts which it is most important to obtain in writing up a case, they may often effect a great economy in the examiner's time." It may be admitted that such facts cannot be obtained on a large scale in any other way. But it is equally important to recognize that few teachers or social workers can fill up such blanks in a reliable way without far more elaborate instructions. They themselves will probably be the first to recognize that a training, both in the general methods of making scientific observations and records, and in the particular methods of making anthropometrical and psychological measurements is urgently needed before such work can be satisfactorily performed.

Dr. Huey's third task was to make clinical studies of thirty-five border-line cases. In his book about five pages are devoted to each case; these form the most interesting and suggestive of all his chapters, and the most novel and valuable part of his work. The study of mental tests has been too much preoccupied with work upon groups, presented in the vague and unanalyzed form of averages and correlations. We need now a closer analysis of individual tests and of individual cases. The material that such intensive studies will contribute both to general psychology and to individual psychology will be of the utmost value. In this respect, Dr. Huey's example is one which may well be followed.
CYRIL BURT.

Diary of a Free Kindergarten By Lilian Hardy. (6 + 173 pp.) Gay & Hancock. 2/-.

THROUGH the pages of this Diary we see a real children's nursery school, almost in the home of the parents. With the best features of the Children's Houses in Rome still within our memory, it is interesting to find that in Edinburgh, in the Cannongate, we have a little school actually realizing some of the lofty social aims common to both. But here we see real children—Mr. Moisture, the boy with never a handkerchief; Hatless Mamie, and the rest, playing real games with real toys—with none of the definite formal training of isolated senses to mar the work.

In early days, to visit the "Goodmorning School," you had to "enter by a narrow little door under a stair, which looks as if it led into a coal cellar;" really a Mission Hall. A bit of waste ground outside was quickly in imagination a garden, and slowly in reality it became one. It was first a rubbish patch, upon which the neighbours threw everything they did not want; "it was an easy thing to throw a bottle out of the window, another to pick up the pieces." But as the ground got to be known as "our children's garden," the property sense of the neighbours grew so strong that "when some boys made a raid over the fence, in search of firewood on bonfire night, 'all the windies was up, and all the women was roarin' at them.'"

The little ones from three to six years old are taught good nursery habits, cleanly ways, and table manners. The first thing is to rub your shoes on the mat. It is considered a disgrace to have to be washed in school, you should come clean; and the importance of being clean becomes an unshakeable principle. "How do you know God is beautiful? Because He keeps Hissel' clean," answered one baby who had learnt the lesson. One of the dirtiest, most unresponsive children in the sorriest of home conditions asked his mother, entirely of his own accord, "not to put treacle on his piece, for it would sticky his face, and he didna like to bother the ladies to wash it."

These are results worth working for, they lie in *behaviour*, and this influences the homes too. "My Bella wont wear a dirty pinny," "You are making Davie a little gentleman," the parents tell Miss Hardy.

It is interesting to notice that Miss Hardy finds, as Madame Montessori does, the difficulty of story telling to these children of extremely limited experience, and small vocabulary; but, instead of excluding it, she encourages the little ones to *talk* over the duties they share each day in Home-Lore time, and by-and-bye we find them gaily acting the Nursery Rhymes—Betty Blue, Contrary Mary, Simple Simon are friends of theirs now.

Through the Diary we see the growth from a very single beginning, when kindergarten room was in turn "nursery, kitchen, schoolroom, playroom, art gallery, church, dormitory, to the deserved expansion into a veritable children's house, where the kindergartener lives. There is a mother's guild, a play centre, and the staff includes a nurse and several assistant teachers.

The pictures give some idea of the happy life of the children—in the nursery with its picture of the Madonna and Child; in the garden, with its dove cage, water-cans, and flowers; in the shelter, sitting comfortably at dinner; on the grass, lying full length, watching bunny; kneeling in a row doing tooth brush drill, and with nurse and the medicine bottle. For the spirit in which the little Diary is written, I quote from a visitor's account written after a visit to the school itself: "St. Saviour's Child Garden stands for Faith in the human race (for Faith can always remove mountains), for Hope for, and love of it. It is a sign, too, of the great courage of those who believe that 'The Kingdom of God is among you.' The future of these children we cannot foresee, but surely the world will be better for the influences on them of their present life. 'Their children's children shall love roses.'" W. A. Bone.

Experimental Studies of Mental Defectives: A Critique of the Binet-Simon Tests and a Contribution to the Psychology of Epilepsy. By J. E. Wallace Wallin, Ph.D. Baltimore, U.S.A. (pp. 155 + vi.) Warwick & York.

All those interested in mental tests will be stimulated to further work by this valuable contribution to the criticism of the Binet-Simon scale, which, as its inventors would be the first to acknowledge, is "still in its experimental stages," and "has not yet been made maximally accurate and scientifically precise." Dr. Wallin examined 378 feeble-minded and 333 epileptic patients by the Binet-Simon method, and the peculiarities in the curve obtained from the latter results led to his making a very searching examination of the tests and a careful comparison between the author's results and those of five other writers, who have worked on normal children in France, U.S.A., England and Belgium. In consequence Dr. Wallin came to two main conclusions—firstly, that the "B-S testing has furnished us with a picture of the results of a process of mental wreckage caused by pathological processes;" and secondly, that the scale as it now exists, is far from perfect. "The further improvement of the scale requires the transposition of certain tests, the elimination of certain others which seem valueless, the equalization of the number in each age or the proper differential adjustment of the system of accrediting points, and the increase rather than the decrease of the number of tests for each age." Further work needs to be done on normal children in different countries to establish national standards of intelligence, for the "studies already made sufficiently indicate that a test too difficult for children of one nationality may be too easy for those of another."

The book concludes with a chapter giving practical guidance in the administration of the tests, which lead to results of little scientific value unless a standardized procedure has been followed. The great need of a simple objective scale and the considerable success of "the Binet-Simon tests should encourage students to make efforts to bring this instrument to its highest perfection." N. G. R. TAYLOR.

Primary Artisan Education. By W. P. Welpton, B.Sc. (xix + 252 pp.) Longmans, Green & Co. 3/6.

The Idea of the Industrial School. By Dr. G. Kerschensteiner. Translated by Rudolf Pinter, M.A., Ph.D. (xi + 110 pp.) The Macmillan Co. 2/6 net.

AT a time when dissatisfaction with the results of primary school education is gathering force, when many advocates alike of reform and of revolution are in the field, perhaps something might be gained by pausing and looking back over the history of elementary education during the last 250 years, and tracing out dispassionately the unceasing conflict between the ideals of an industrial, and of a scholastic education for the children of the working classes. Such a survey is, however, outside the limits of a brief review. The millennium did not come with the 3 R's, and the introduction of object teaching apparently left it as far off as ever.

With the advent of Neo-Pestalozzianism, reformers have tended to divide into two camps, the one seeing in "practical education" and the other in "vocational schools" the solution of the enigma of primary instruction. The one camp has a representative in Dr. Kerschensteiner, the other in Mr. Welpton, and their views, appearing simultaneously in this country, deserve the thoughtful consideration of teachers. Dr. Kerschensteiner looks to a reform in the spirit of school work from the earliest years. He teaches once again the old lesson that education is not an affair of objects but of inner experience, and of a quickening of the whole spiritual life of the individual. But education implies discipline; accordingly he gives a high place to the inculcation of ideals of duty, sturdiness, and habits of industry. Mr. Welpton, though he does not present his thesis so concisely, is animated by the same spirit. He devotes himself, however, to boys between 11 and 14 years of age, and says little of their previous education. With his general thesis we should be disposed to agree, though differing on points of detail. It is difficult to be quite sure what the author means by "work," whether in fact his interpretation is sufficiently liberal. The curriculum, too, as sketched out, strikes one as somewhat overloaded, or as implying a high intellectual level on the part of the average boy. The example of method in geography (p. 115) is decidedly unhappy, and with regard to the scheme of practical activities (p. 144) one cannot resist asking, Why not cobbling and patching breeches as well? The book is a little too pessimistic in parts, but, nevertheless, it offers a very useful contribution to the question of how to vitalize the work at the upper end of the primary school. C. BIRCHENOUGH.

Handwork in Early Education. By Laura L. Plaisted. Oxford, Clarendon Press, 1913. (xiii + 327 pp.) Price 4/-.

THE aim, stated in the preface "to give copious illustrations of actual work done by children whose ages range from 4 to 12 years, in the hope of suggesting ideas to the reader which may be applied in varying forms to her own form," is thoroughly carried out. The book is full of suggestive photographs. The book shows a double classification—there are chapters devoted entirely to work in special material, as light woodwork, basketry, paper cutting and folding; and also handwork in its more purely illustrative form in connexion with history and geography. It seems a pity to devote space to the representation of the limited form of building with III, IV, V, VI gifts of Frœbel, unless for purposes of comparison with the much freer methods given by Mr. Wells in his Floor Games, and so advantageously carried out in the more modern schools to-day. The list of reference books at the end of each chapter is helpful; this wider reading should enlarge the teacher's conception of the possibilities of handwork when it is taken in the liberal spirit.

W. A. BONE.

The Mental and Physical Life of School Children, by Peter Sandiford, M.Sc., Ph.D. (xii+346 pp.) Longmans, Green & Co. 4/6.

THE book is the fruit of seven years experience as a Lecturer on the subject, both in America and in England. It is intended to serve as a text-book for students (presumably students who are preparing for the teaching profession), and as such presents many features which are new at any rate to English books of the kind.

Dr. Sandiford tells us in his preface that he believes the mechanistic conception offers the simplest explanation of mind, and that he has on that account adopted it in his book. For this reason no doubt, he devotes the first two sections (about one third of the whole) to the discussion of Heredity and Environment, Physical Growth, Medical Inspection, and the Physiology of the Nervous System. Although this is a considerable proportion of the whole book, we may doubt whether these subjects can be profitably dealt with in just over a hundred pages. The treatment is necessarily extremely condensed, and the defect is not altogether overcome by appending a long list of books, &c,, for reference to the various chapters. A critical reader might not unreasonably urge also that Physical Growth is only a very narrow interpretation of the term Physical Life, and that the "mechanistic conception" has led Dr. Sandiford into a position which apparently excludes the study of the conative aspect of mental life.

His treatment of psychology in Sections III and IV of the book suffers greatly from this devotion to the mechanical view. Whilst his chapters are filled with the results of recent researches, we look through them in vain for any discussion of the child as a person. Surely this is a serious omission. If there is one thing a teacher should realize about his pupils, it is that they are not mechanical contrivances for picking up habits, for memorizing, and the like. These things are of course very important, but they are not ends in themselves. Actual acquaintance with very small children brings out very clearly their powers of direction, initiation, thinking, and the like, and a book which is to constitute a text-book of the mental life of school children ought surely to give considerable attention to all these topics, but Dr. Sandiford leaves them severely alone, apparently because they do not fit into the mechanical conception.

The chapter on "Exceptional School Children" deals only with the Feeble-minded, and includes a translation of the Binet-Simon Tests. Why the limitation to Feeble-minded? Surely the super-normal pupils are equally worth attention in such a chapter.

Although the author's view of what child life means seems to us so stunted that it is difficult to accept his book as fulfilling its purpose, there is much in it which is not readily available elsewhere, and we are grateful to him for presenting it at once so clearly and attractively. J.A.G.

The Demonstration School Record, No. II. Edited by J. J. Findlay, (xxxi+273 pp.), University Press, Manchester. 5/- net.

FIRST NOTICE.

ALL Students of Education, and especially those who are interested in experimental pedagogy, will welcome the appearance of this new collection of material from the Fielden School. Whatever there may be of final value in the various contributions here brought together by Professor Findlay, the book is an able and honest effort to deal with the school problem in the light of guiding principles, and to put to practical test various new ideas which have entered the educational world since the appearance of the last volume some four or five years ago—as, for example, the Montessori Method.

The bulk of the volume is made of syllabuses in the various sections of the curriculum. Each sectional syllabus is preceded by an essay, in which the point of view of the teacher is set forth, and his method of treatment described. Professor Findlay himself contributes the first three chapters dealing with the life of the School as a corporate body (including teachers, pupils, and parents) with the School pursuits in general and with the motives which prompt the working-activities of the pupils.

It would be impossible to give anything like an adequate account of the contents of the volume. The fact that it frequently challenges criticism is only a tribute to its value, and in raising some difficulties we are none the less conscious of the helpfulness and stimulating character of the whole book. In reference first of all to the section headed "Humanities." Its most striking feature is the interesting attempt which is made there to treat History and Geography as one subject. One would imagine that the authors (Mr. Smedley and Miss Dickenson) are not Geographers in the modern sense of the word. They are concerned mainly with political geography—the development of towns and nations. Even with this allowance it is not obvious how topics like the following are *mainly* geographical. "Failure of Absolute Monarchy: Growing Consciousness of Power in the People." (This relates to the de Montfort period, but were the *geographical* conditions of that time different from those of two centuries earlier? What had geographical factors as such to do with these things?) "Conditions and Occupations of the People in Different Strata of Society in France" (Period of Revolution). "Comparison of French and English Government." "Discussion of Principles of Government."

A careful study of the syllabus rather strengthens the view that any systematic correlation of History and Geography must mean that either the one subject or the other has to give way. In this case, Geography, as currently understood, disappears almost entirely, and it would also seem that causal connexions are suggested sometimes *(v. supra)* which will not bear examination. Increase in capacity to deal with geographical environment is one thing, actual determination of events by geographical conditions is another. The former is, of course, an important aspect of human progress, but the geographical factor is relatively static and its study belongs to geography, not to history.

In spite of this criticism, it is only fair to add that the syllabus and the detailed account of the treatment of the topic is full of pedagogic inspiration. The selected examples of children's "reactions" to the stimuli provided in the course are valuable testimony to the effectiveness of the work done. J.A.G.

Studies in Foreign Education, by CLOUDESLEY BRERETON, M.A. (xii+302pp.) G. G. Harrap. 5/- net.

MR. BRERETON knows his France and French Secondary Education thoroughly, and five-sixths of the book deals with France and in the main with Higher Education in that country. Many of his chapters have appeared before in Journals or Official Reports, and their reappearance in book-form is an illustration of the rapid changes which are taking place in France as elsewhere in this field of public effort. Mr. Brereton has found it necessary, in other words, to annotate himself. Long footnotes to many of his pages tell the reader that the text is out of date, as such and such action has since been taken. Although the book would have been easier to read had the text itself been altered, the author's method is perhaps justified from the standpoint of history.

We have, in point of fact, no other book on French education quite so useful. By comparing French and English Schools—their aims, organization, curricula, discipline, and the like, Mr. Brereton has made it easy for his readers to grasp the essentials of the foreign system, and at the same time to see very clearly some of the chief weaknesses in his own. Sometimes one is tempted to think that his admiration for France has led him to do less than justice to his own country.

The two chapters on Germany are relatively slight. They deal only with the *Gymnasien*, and with obviously less fulness of knowledge. "A Look round German Schools" should surely have given us a glimpse into the interior of the *Oberrealschule*, and in discussing the results achieved, we should also have liked to see a reference to the military and social pressure which accounts for at least as much as the professional skill of the teachers.

But, after all, the book is really about France, and what is there written is so full of knowledge that we may excuse a little ballast in the last fifty pages.

J.A.G.

The Living Past: A Sketch of Western Progress, by F. S. MARVIN, M.A. (xvi+288 pp.) Clarendon Press.

MR. MARVIN shares with many others the feeling that the student of history is so much given up to detail and specialization that he is in grave danger of missing the great lesson which History should teach. Even in the undergraduate study of History, the special period reigns supreme, and within that period it is not mankind as such that is the chief concern. Neither teacher nor student is in the habit of raising such questions as, what part did these people play in the great constructive work of the world? what did they inherit from their predecessors? and what do we owe especially to them?

It would be difficult to deal with problems of the kind adequately, otherwise than by statements accepted on trust, unless the students had already some acquaintance with what might perhaps be called descriptive World-History. Yet surely it is most desirable that some acquaintance with the organic development of what promises to be a unified humanity should be a necessary element in the equipment of an educated man. Probably a reform in our methods of teaching History would do much to reconcile public opinion to this view. It will of course be urged that a broad treatment of the subject such as Mr. Marvin's book suggests might result in vagueness and verbalism. Conceptual treatment is admirable when the concepts are born of adequate acquaintance with detail—a position which Mr. Marvin himself would of course accept.

The book breaks new ground, so far at least as English historical literature is concerned, and we can conceive nothing better for a youth who has been buried in the detail of his special period than to read this general account of man's activities and their meaning for the race. Even should he be inclined to question the writer's interpretation of history, it will do something to correct his own perspective and set him thinking out the problem of interpretation for himself. At any rate he will not question Mr. Marvin's fairness, and all his readers must admire his robust faith in Humanity.

No teacher of History can afford to neglect this fascinating book. It suggests, rather than expounds, a treatment of the subject which rightly applied would add greatly to its intellectual charm. J.A.G.

Essays on Mathematical Education, by G. St. L. Carson, with an Introduction by D. Eugene Smith. (iv+139 pp.) Ginn & Co. 3/- net.

Mr. CARSON, who is Head Mathematical Master at Tonbridge, has rendered valuable service to the cause of Mathematics as a school subject by his admirable papers in the *Mathematical Gazette* and elsewhere, and he has done well to republish them in volume form. Not all teachers of arithmetic, for example, are readers of Mathematical Journals, but every student in a Training College should read the essay on that subject printed here. Not less illuminating will they find his papers on *Intuition* and *The Useful and the Real*. Throughout the essays, one is impressed by the soundness of their underlying psychology.

Outline of a Course in the Philosophy of Education, by J. A. MacVannel, Ph.D. (ix+207 pp.) Macmillan & Co. 4/- net.

THIS is a syllabus of a lecture course "for some time in use in a class in Teachers' College, Columbia University." Professor MacVannel's treatment of his subject is clear, his doctrines are unexceptionable, and yet the perusal of the book leaves us cold. This may be due in part to the fact that it is a syllabus, but more, we think, to the nature of the treatment. It is so philosophical and so free from that positive helpfulness which the active teacher or administrator looks for in his professional reading. Such a reader wants facts, illustrations, constructive suggestions. If these can be thrown into a philosophical setting, so much the better, but without them the philosophy seems wanting in content and we are apt to set the book aside as merely a priori. To each chapter is appended a very complete bibliography, though the very completeness is embarrassing. A whole library is thrown at our heads with little or no guidance whatever as to relative values.

Educational Ideals and a Valiant Woman, by M.F. (xi+303 pp.) G. G. Harrap. 3/6 net.

THERE is little to say of this book beyond commending it warmly to the perusal of teachers, old and young. If the dull grind of everyday routine has hardened their views, it will do something to soften them again, and the teacher fresh to his work will find in it much to encourage and stimulate him. Inspired apparently by a peculiarly gifted teacher, the author discusses in an intensely human way many problems which vex schoolmasters. The chapters on the mother tongue, history, and science, and on moral education may not be very profound, but they are extremely suggestive. The style is pleasantly literary, free from professional pedantry, though abounding in references to much of the best in European pedagogy, ancient and modern.

Everyday Problems in Teaching, by M. V. O'SHEA. (388+xlii pp.) Longmans, Green & Co. 4/6 net.

PROFESSOR O'SHEA has selected a series of classroom topics for discussion. He treats them in a simple, chatty, and rather superficial way. This apparently was his intention. As paternal addresses to teachers' assemblies the chapters might serve a useful purpose, but one wonders whether it was worth while making a book of them. We look for something more substantial in cold print as a rule. At the same time, readers who do not care to be startled or driven into hard thinking, may find sufficient "meat" in the book to repay them for the time taken in following these talks on Discipline, Teaching Pupils to Think and to Execute (Execution means Writing, Spelling, Singing, and Arithmetic so far as they involve motor habits), Tendencies of Novices and the like. A collection of exercises and a long list of Books for Reading is appended.

Ancient Greece, by H. B. COTTERILL, M.A. (xxiv+499 pp.) G. G. Harrap. 7/6 net.

THE author has aimed at treating the ancient history of Greece in such a way as to throw light upon its spiritual productivity—its art, literature, and philosophy. His clear and pleasant style, his abundant use of illustrations, and the judicious way in which he has chosen what to write about and what to leave alone, make it at once an exceedingly attractive and most useful volume. The publishers also have done their part well. The illustrations are admirably reproduced, and the general form and appearance of the book promises well for the success of the series on "Great Nations," of which it is the first volume. We can warmly commend it to Training College Librarians.

BOOKS RECEIVED.

Animal Geography, by Marion T. Newbigin, D.Sc. (238 pp.) Oxford: The Clarendon Press. 4/6.

A Comparative Geography of the Six Continents, by Ellis W. Heaton, B.Sc., F.G.S. (219 pp.) Ralph, Holland & Co.

Questions and Exercises in Geography, by Robt. J. Finch, F.R.G.S. Ralph, Holland & Co.

L'Annee Pedagogique, par L. Cellérier et L. Dujas. 1912. (524 pp.) Alcan.

[We offer a cordial welcome to the second appearance of this extremely useful volume. The first hundred pages are taken up with original articles, amongst which first place is given to an article by M. Buisson, *L'ecole et la nation en France*. The Bibliography of Education for the year is singularly complete, and the summaries of books and articles are admirably clear.]

Montessori Principles and Practice, by E. P. Culverwell. (309+xix pp.) Bell & Sons. 3/6 net.

Exercises in English Grammar, by L. Notman, M.A. (54 pp.) 6d. net.

Pædologisch Jaarboek, edited by Professor M. C. Shuyten. 1913, Eighth year. (323 pp.) De Nederlandsche Boekhandel, Antwerp.

[A very useful index to current literature in "paidology."]

Literary Selections from Newman, with Introduction and Notes by a Sister of Nôtre-Dame. (xv+210 pp.) Longmans, Green & Co. 1/6 net.

The 'ABC' of Cutting and Making Garments for Every-day Needs, by B. L. Blackmore. (viii+222 pp.) Longmans, Green & Co. 2/6 net.

Longmans' French Texts, edited, with Notes, Exercises, and Vocabularies, by T. H. Bertinshaw. *Ulysse chez les Cyclopes*. Octave Simone. Teachers' Edition, 8d. *Ursula Mirouët*. H. de Balzac. Teachers' Edition, 1/3.

A Primer of English Citizenship, by F. Swann, B.A., B.Sc. (xix+467 pp.) Longmans, Green & Co. 1/6.

Introduction to World History, by M. W. Keatinge and N. L. Frazer. (284 pp.) A. & C. Black.

Irregular French Verbs, by R. W. Wright. (70 pp.) Longmans, Green & Co. 1/4.

A Manual of Music for use in Training Colleges and Secondary Schools, by T. Keighley. (75 pp.) Longmans, Green & Co. 1/-

Light Woodwork, by W. G. Alderton and J. T. Baily. (128 pp.) Edward Arnold. 2/6 net.

Longmans' Modern French Course, Part I, by T. H. Bertinshaw. Longmans, Green & Co.

Longmans' British Classics:

- **Macaulay's Essay on Warren Hastings,** edited by D. Salmon. (xlviii +197 pp.) Longmans, Green & Co. 2/6.
- **Macaulay's Essay on Frederick the Great,** edited by D. Salmon. (xxxiv +133 pp.) Longmans, Green & Co. 2/-

A Digest of British History, by S. H. McGrady (with Introduction by Oscar Browning). (341 pp.) Ralph, Holland & Co.

A History of Europe, by A. J. Grant. Part I, 2/6; Part II, 3/-; Part III, 3/-

Child Mind, by B. Dumville. (vi+214 pp.) Clive & Co.

School Journey Record, 1912. (116 pp.) School Journey Association.

A New Discovery of the Old Art of Teaching Schoole, in Four Small Treatises, by Charles Hoole. Edited, with bibliographical index, by Prof. E. T. Campagnac. (357 pp.) University Press, Liverpool.

[A beautiful reprint of the seventeenth century educational classic.]

Moral Instruction, by F. J. Gould. (xii+196 pp.) Longmans, Green & Co. 2/6.

Poetry and Life Series. G. G. Harrap. 10d. each.
Pope, by E. W. Edmonds. **Longfellow**, by O. Smeaton. **Tennyson**, by R. Brimley Johnson.

A Practical Course in Secondary School English, by G. Ogilvie and E. Albert. (484+xii pp.) Harrap. 4/6 net.

English Literature in Prose and Verse. G. G. Harrap.
Beowulf to **Chaucer**, by Amy Cruse; 1/. **Chaucer** to **Bunyan**, by E. L. Elias; 1/6.

Great Names in English Literature.
Chaucer to **Bunyan**, by E. L. Elias. 1/6.

Educational Psychology Monographs. Edited by Dr. G. M. Whipple. Warwick and York. $1.
The Marking System in Theory and Practice, by J. E. Finkelstein.
Variations in the Grades of High School Pupils, by C. T. Gray.
Inductive *versus* **Deductive Methods of Teaching**, by W. H. Winch.

Archives Sociologiques. Bulletin No. 28. Institut Solvay.

Little Children of the Church, by Rose Read and Hetty Lee. (vii+243 pp.) National Society.

From Baptism to Holy Communion, by H. V. Hughes. (vii + 290 pp.) National Society.

St. Edmund, King and Martyr. A Miracle Play, by M. H. Debenham. (47 pp.) National Society.

More Characters and Scenes from Hebrew Story, by Hetty Lee. (viii+264 pp.) National Society.

The Life of Christ, by the Rev. F. M. Blakiston. (xi+384 pp.) National Society.

Obliviscence and Reminiscence (Monograph Supplement of *British Journal of Psychology)*, by P. P. Ballard, M.A.

PERIODICALS.

Société libre pour l'Etude psychologique de l'Enfant, Bulletin Mensuel. The Training School Bulletin. The School Review. Child Study. Child Life. Bulletin of the American Academy of Medicine.

(Reviews and Notices of several important books have had to be held over until the next issue.)

TRAINING COLLEGE ASSOCIATION.

NOTICES, &c.

THE Annual Meeting of the Association will be held on January 9th, at 10 a.m. After the business meeting, the new President (the Rev. Canon Morley Stephenson) will deliver an address, and Discussions upon Physical Training and Demonstration Schools will follow. It is hoped that members will do their utmost to attend, and as the meeting is held during a very full week of educational conferences, we may confidently expect a large proportion of the membership to be represented.

A deputation from the Council of Principals of Training Colleges recently waited upon the Board of Education, urging the special claim of Women's Training Colleges for increased grants. The deputation was sympathetically received, and the strain of the situation was admitted, especially in regard to the Colleges which are not under public control, as the phrase now runs, but in what form, if any, the State could offer relief was the point under discussion.

The Journal of

Experimental Pedagogy

AND

Training College Record.

EDITED
(on behalf of the Training College Association) by

PROFESSOR J. A. GREEN,
The University, Sheffield.

THE purpose of the Journal is primarily to promote pedagogic research. To that end, a first place will be given to original enquiries bearing on pedagogic problems. Articles on the psychological aspects of education, on educational ideals, &c., will also be published from time to time.

Literary communications should be addressed to the Editor. Responsibility for opinions expressed in the Journal rests solely with the writers. In no case is responsibility to be attached to the Association.

The publication of the Journal is made possible by special annual subscriptions from various Training Colleges and from persons interested in pedagogic enquiry.

The Journal will appear three times a year—March 5th, June 5th, December 5th. It will be sent post free to subscribers of **3**/- per annum (single copies, **1**/**2**), which should be sent to the Editor. It may also be obtained from the Publishers through the Booksellers in the usual way.

Copies of Nos. 1, 2, 3, 4, and 5 (making the first volume of the Journal, 423 pp.) may still be had from the Editor or from the Publishers. 5/- post free.

Vol. 2, No. 4. March 5th, 1914.

DAY-DREAMING.

By Professor J. ADAMS, M.A., M.Sc., LL.D.

PROFESSOR Dr. Sigismund Freud made up his mind long ago that all our dreams are merely our endeavours to obtain a factitious satisfaction of our thwarted desires. Every dream is the mental reconstruction of events in such a way as to gratify a wish. Things do not go in the real world as we would like them, so we put matters right in dreamland, where we are free from the regrettable restrictions imposed upon us by that disagreeable complex commonly called "the nature of things." Or, at any rate, dreamland is *nearly* free from troublesome restrictions; for there is left an annoying inhibiting force, with which we must reckon. But even that, as we shall see, may be manipulated by a skilful dreamer in a way that is not at all applicable to the hard facts of life.

The wish-theory bristles with difficulties. We dream that some dear one is dead, and turn reproachfully to the Freudian, and ask if he calls that the fulfilment of a wish. He explains, courteously enough, that he does not believe that *now* you desire the removal of your dear one; but he asks meaningly, "Was there never a time when you would have welcomed the passing of him who is now so dear to you, and has been so—with a trifling little temporary lapse now and then—all along?" Our answer is not always so ready as we should like it to be. Then a doctor dreams in the most sympathetic way about another doctor of his acquaintance who makes a serious mistake in diagnosis, and is exposed to severe public criticism. In the dream the dreamer is full of respect for his colleague; in fact, more full of respect than during waking hours. The Freudian maintains that this dream is a plain fulfilment of the dreamer's desire to see his rival humiliated. But what about the respect and sympathy in the dream? Would it not be a much more satisfactory fulfilment of the wish if we had dreamt of the rival as being caught out in a blunder in such a way that we could openly gloat over him? The Freudian admits the force of our argument, but explains that in dreaming a certain reserve is necessary, if we are to have our wishes gratified at all, for there has to be overcome that inhibiting force to which we referred in the last paragraph. Compelled, like all psychologists sooner or later, to fall back upon a metaphor, Freud calls this force the Censor. Her function (if we freely grant Freud his metaphor, surely he will not cavil at the gender we adopt) is to keep our dreams within reasonable bounds. We might all like to dream terrible evils happening to our enemies, to picture them in the most disgraceful plights, and then openly glory in their fate. It is here that the Censor intervenes:

> "'Nay, but there's a decency required!' quoth she."

In order to get our dreams past the Censor we must modify them in such a way as to deceive her into believing them harmless and respectable; but Freud assures us that if we can but analyze them aright they will always be found to embody a more or less reputable wish. The ingenuity he and his followers expend on their work of analysis is so amazing that it rouses the profoundest doubts in the minds of those who interest themselves in these matters. Can it be possible, we ask ourselves, that we are such terribly deep persons as all this makes us out to be? No doubt, on the frail human side, we are rather flattered at the implied complexity of our mental processes, but that part of us that is given over to science and logic and such matters is not happy about the whole scheme of wish-fulfilment in dreamland.

It is true that there are pleasant, plain-sailing dreams that are obviously the fulfilment of our wishes. Often we waken up in the middle of such a dream, and do our futile best to fall asleep again quickly so as to "continue in our next" the glorious tale that we would fain make a serial. It is the dreams that are distorted, at the address of the Censor, that give rise to scepticism. Yet there is a class of dreams that appear to satisfy in every case the Freudian demand. Day-dreaming owes all its charm to its power of giving, on the dream plane, immediate effect to our wishes. Tired out with the continual rebuffs resulting from the nature of things in real life, the soul deliberately withdraws within itself, and makes an ideal reconstruction of things as we wish them to be. We have all done this sort of thing, and as a rule have experienced little difficulty either in starting the process or in keeping it up. We are naturally a little curious about the status of the Censor here. Why does she not interfere? Freud tells us that she is specially alert during our waking hours, and that it is only during the hours of sleep that she so far loses her keenness as to be imposed upon by the distortions that afterwards give the psycho-analyst such trouble to interpret. But underlying all that we have said about the Censor is an assumption that her function is a moral one. So strong is the tendency to make her a moralist that many people who read Freud are inclined to ask how his Censor differs from the older unpersonified conception of conscience. The answer is that the conception of the Freudian Censor does not necessarily involve moral evaluation at all. Her business is to see that certain acts or modes of thought, points of view, and what not, are duly respected. She represents the paid-up capital of the experience of the soul concerned. A hypocrite, for example, while living with religious people, must depend upon his Censor to keep him from saying or doing things that are out of keeping with his environment. So in speaking a foreign language, we give the Censor the work of inhibiting our irritating tendency to employ words and constructions alien to the speech we are using. In this view the Censor has obviously a place in day-dreaming.

To begin with, she may be a little concerned on the moral side; for though her work is not exclusively moral, she is not precluded from dealing with morality. She may object altogether to day-dreaming, for example, and regard it as a demoralizing habit. Strengthened by the disapproval of teachers and parents she may do her best to inhibit the whole process. But even when the paid-up capital in experience and thought of the person concerned is sufficiently great to overcome the inhibition and institute a day-dream, the Censor has still functions to perform. Her business now is to keep the train of ideas within the bounds of possibility. She would probably like to keep to the still stricter limits of probability, but such restraint would spoil the day-dream for most people, though the highest kinds of day-dreams are those that infringe least on probability. For a little self-examination will show that we never really enjoy a day-dream that is quite divorced from probability. In order that a day-dream should give its full flavour there must be means and ends, difficulties and surmountings of difficulties. No doubt the difficulties must be surmounted in all speed, and with the minimum amount of effort. Things must fit in easily, coincidence must be worked for all it is worth, everything must be reached by pleasant short-cuts. But if there is to be real enjoyment a process of some kind there must be. Thus at the very beginning the Censor gets her hand in. She does not allow us to start too high. We must begin somewhere not very far removed from the point at which we actually stand in real life. The girl who starts her day-dream by being a princess straight away, spoils her chances of the higher delights. Her Censor is clearly not in good condition. The period between princess-hood and happy-ever-afterwards is apt, in these circumstances, to be foreshortened, and the dream comes to an uneasy end in the vagueness of uneventful enjoyment of life.

It is the Censor's business in connection with day-dreaming to interpolate as many processes as possible, and to secure that in those processes due attention is paid to the nature of things so far as that is not modified by dream conditions. Her work may be well illustrated by what she does in other departments. Novel-writing is not far removed from day-dreaming, and in the writing of novels authors depend greatly upon the Censor. She must carefully scrutinize the assumptions of the plot, and throughout its development must be on the watch for anything that is inconsistent with these assumptions. In the grotesque novel we have the nearest approach to day-dreaming. When Jules Verne, H. G. Wells, or Fred Anstey starts on a fanciful tale he makes certain assumptions, unwarrantable assumptions. These the Censor does not like, and so far as they are concerned she has to be bludgeoned into accepting them. But once they are accepted she is within her rights in protesting against anything that contradicts them. It will be found that the best novelists are scrupulously careful in observing the consistencies demanded by the Censor. When Mr. Wells has brushed aside the Censor's remonstrances against the possibility of a man becoming invisible, he is extremely careful to make all that follows conform strictly to the ordinary laws of nature. For example, the newly-swallowed food remains visible till it has become assimilated, and therefore an organic part of the man, and thus invisible. Apart from the one ridiculous assumption of the transforming power of the Indian Stone, *Vice Versa* is an extremely accurate account of what might take place in an ordinary English school and home.

So with our day-dreams. The Censor's work must be thorough if they are to be justifiable. But the preliminary question has to be faced about that initial bludgeoning of the Censor before the dream begins. Is it ever legitimate to day-dream? There are those who are very firm on this point. They maintain that all stuff and nonsense of this kind only unsettle children's minds, and make them incapable of doing their proper work in this exacting practical world. Do not let us take shelter here under the promising cover of the impossibility of getting away from day-dreaming. It is in a sense true that all our scientific speculation is a kind of day-dreaming: every hypothesis owes its birth to the imagining of a state of things different from that with which we are familiar. False hypotheses are merely day-dreams that, from the practical person's point of view, have failed; whereas those that have succeeded were never really day-dreams since they represented what was actually true. But giving up all such plausible explainings-away, and accepting the Freudian view that the day-dream is an attempt to satisfy on the mental plane some ordinary human wish, it would seem that day-dreaming may be justified, under certain conditions.

To begin with, we must lay down the condition that the dream must include processes as well as results. A dream that is merely a series of pictures of ends attained, with no record of means or efforts, is one to be avoided. It exhausts all the energies of the dreamer in the mere enjoyment of the pictures he has created. It is no more than gloating. Fortunately this static enjoyment of ready-made results gives a much inferior pleasure to the dynamic process in which attention is divided between ends and means. The contrast between the actual and the ideal is more enjoyed when there is an effort to bridge the gulf between them. Even in the classical case of Alnaschar, with its blatant moral, there could have been little enjoyment for the dealer in brittle ware had he merely imagined himself at once the important person who kicked out his enemy. There had to be steps—handsomely abbreviated no doubt, but still steps—between his present obscurity and his ideal glory, otherwise that glory would have lost some of its splendour. What the moralist objects to in day-dreaming is the lotus-eating attitude it tends to induce, and so far as the static variety is concerned the objection is justified. The person whose ideal is to lie on a sofa reading novels has nothing to say against this passive enjoyment of the day-dream, but most other people have. What is wanted is a kind of day-dreaming that is in itself active, and is likely to lead to further activity outside of dreamland.

The moralist is sometimes not a little unfair in treating of this subject. He adopts a heads-I-win-tails-you-lose attitude. If the dream leads to nothing it is bad; if it does lead to anything, then, of course, it was not a day-dream at all. When Warren Hastings, as a boy of seven, "lay on the bank of the rivulet which flows through the old domain of his house to join the Isis," and dreamed that he would go afield and make his fortune, and come back, and become, like his forbears, Hastings of Daylesford, he was day-dreaming. That he actually brought to pass much of which he had dreamed does not in any way alter the fact that it was dreaming. A day-dream that includes processes as well as results is a thing to be fostered. When in the old days the commander of a ship of war encouraged his midshipmen to imagine, during their lonely watches, all sorts of things happening to the ship, and to imagine also how to deal with them, he was really asking them to day-dream, only the dreams were to include practical applications. No doubt these seafaring young gentlemen would imagine many ingenious but very impracticable plans, and it would be the business of the Censor to do what she could to suggest and emphasize the special difficulties in each case. No doubt also the midshipmen would too often neglect her cautions, and content themselves with enjoying in luxurious self-complacency the contemplation of the admirable results they had attained by easy imaginative methods. Yet it has to be admitted that the commander was justified in his recommendation. The youngsters at least familiarized themselves with the conditions of the problems they were likely to be called upon to face. They prepared a suitable mental content, and above all they prepared it in a dynamic connection.

A very practical problem for the teacher is the relation between day-dreaming and the reading of certain kinds of poetry. The teacher of literature makes heroic efforts, in these latter days, to stir up his pupils to respond to the stimulus of the poet. We are beginning to discriminate for educational purposes between the active poet, the person who writes poetry, and the passive poet, the one who reads and enjoys what the other has written. The aim of the literature teacher is really to make as many passive poets out of his pupils as their capacity will permit. This new teaching of *appreciation*, for which Dr. F. H. Hayward has done and is doing so much, all points in the same way. Its essence is the placing of the reader in the same position as the writer, the enabling of the reader to live again through the experience of the writer. To follow the poet in this way is in many cases to dream again the dreams he has dreamt. We need a word to express this redreaming, and we can imagine the Germans inventing a new transitive verb *nachträumen*, and introducing into the school curriculum the subject of *Nachträumung*. For us at present the important point is whether there is not more danger in this appreciative after-dreaming than in the roundly-condemned day-dreaming. When the literature teacher has had his will, and reduced most of his class to a drowsy-eyed redreaming of the glorious dreams of the poet, are the pupils not in a parlous state? Are they not merely enjoying passively the beauties lent them by the poet, and to that extent becoming less fit for the real work of life? Fortunately even common-sense English people no longer accept Locke's deplorable views on poetry, and the scurvy treatment the poets receive at the hands of Plato himself loses its didactic value when we remember how much he dreamt on his own account. We have reached that stage at which we believe it possible to enjoy poetry in moderation without losing touch with the realities of life.

But indeed there is a difference between the state of the passive poets and the day-dreamers. Both, no doubt, passively enjoy the dream life that is carried on in their souls. But there is a stronger personal element in day-dreaming than in the passive enjoyment of poetry. No doubt the German students of æsthetics, with their distinction between *Einfühlung* and *Einsfühlung* emphasize the projection of the reader's personality into the matter that the poet presents to him. But there is a world of difference between thrusting oneself into an environment already created, and creating an environment for ourselves. It is here that the Freudian conception of the dream as a wish provides a clear demarcation between the two enjoyments. The passive poet may enjoy his experiences in the environment provided for him, and return unimpaired to the hard facts of life. He has been living in another world and comes back refreshed. The day-dreamer coming back from a world deliberately differentiated by himself from that of daily life, may come back either refreshed or dispirited according to the kind of differentiation produced. The necessary connexion now recognized by pyschologists as existing between emotion and a corresponding activity has a very clear bearing here. An emotion that expends itself upon itself may perhaps be permitted as an occasional relaxation; but wherever possible an emotion should be made to lead to some activity co-ordinated with it. A wise arrangement of our emotional life is to confine the passive enjoyment to states produced by the reading of the poetry of others, and to have in every case of day-dreaming an active element.

Can the teacher in any way regulate day-dreaming? At first sight it would appear absurd to ask whether day-dreaming may form any part of the school curriculum, but in view of the new appreciation-schemes, and particularly in connexion with the new cult of story-telling, the question is not so unreasonable. In point of fact a rather favourite form of composition, that has been long in use in our elementary schools, is really an exercise in day-dreaming. Teachers of composition know that for young pupils nothing produces such good results as subjects in which the imagination is allowed absolutely free play. The Autobiography of a Parrot, The Reflections of a Tramway Horse, A Conversation between a Cat and a Dog, bring out greater evidences of actual individual mental activity than the more abstract or matter of fact subjects usually given. No better example of clear *Einsfühlung* can be supplied than that found in such exercises. Still closer to day-dreaming, however, is the personal exercise of freedom implied in such subjects as "how would you spend half-a-sovereign?" The point in such an exercise is that the pupil is left perfectly free within certain definite limits, so that it might be not unreasonably maintained that this is an exercise in regulated day-dreaming. Obviously the greater the number of conditions imposed the more remote from dreaming does the exercise become. One is tempted to include by a *tour de force* certain of our arithmetical problems within the range of the day-dream, but the distressing number of conditions to be observed introduces such a coercive element that we feel it would be idle to call them dreams. Occasionally we do find a somewhat over-imaginative child being led away by the temptation of the teacher's invitation to "imagine a case." But the resulting day-dream is so obviously out of place that no practical teacher will have anything to say in its favour, however willing to take a tolerant view of "the busy faculty."

But when we come to such a subject as history, certain teachers adopt methods that may not unfairly be described as encouragements to day-dreaming. What the older-fashioned Masters of Method used to describe as "picturing out" is clearly first cousin to day-dreaming. If the pupil is encouraged to reconstruct the old backgrounds so as to realize as vividly as possible how old historic incidents occurred, he is very likely to go beyond the *mise en scène* and introduce himself as one of the characters in the play that he sets up. No doubt the more severe college-bred teachers of history will disclaim any such tendency. They will point out that for the past twenty or thirty years history has ceased to be a mere dramatic presentation, and has become a science. Even the orthodox authorities on history, as Mr. G. M. Trevelyan shows in his recently published book of Essays (*Clio, a Muse*), are beginning to be less severe on the more picturesque writers like Macaulay and Carlyle, and seem willing to admit that these authors wrote something that if not scientific is at least artistic, and deserves consideration as a sort of history. But in any case history as taught in schools is generally regarded as a study that has its legitimate human side as well as its scientific, and, as actually taught by sympathetic teachers, has more of the artistic than the scientific in it. Rightly or wrongly, history is regarded as one of the chief humanist studies in our schools.

So strong is the tendency to dream out the events of past ages that the dramatizing of historical scenes and incidents has for long been recognized as a legitimate mode of impressing historical truth. Now it is not to be supposed that the young performers in a school sketch of an historical incident confine themselves to the words set down for them by their teachers. The make-believe and the dressing-up have the natural effect of letting loose the young imagination, and stirring it up to private enterprise. The youngsters cannot be limited to the reproduction of the more or less legitimate interpretations that teachers put upon historical records. This was realized by the teacher whom Mr. E. G. A. Holmes has set up as the model for all others. In *The Dramatic Method of Teaching*, Mrs. H. Finlay-Johnson gives an account of the methods she followed in her school at Sompting, methods that raised her to the rank of Egeria. A natural criticism of this book is that all subjects do not lend themselves to dramatic treatment. We have seen already the difficulty of bringing arithmetic within the range of the day-dream, and most of us are inclined to think that it would be a serious problem to dramatize the multiplication table. But Mrs. Finlay-Johnson gallantly faces the difficulties of the position, and boldly includes not only Arithmetic but also Geography and Manual Training in her scheme. But it has to be admitted that she finds her most useful material in History and in those parts of Literature that have an historical setting. Further, when we look into her methods we find that she does not confine herself to the mere dressing up for tableaux or to the barren representation of actual facts. She allows and encourages her pupils to read themselves into the elements that they manipulate. Dressing for a part inevitably leads to some degree of make-believe, and so far from repressing this tendency Egeria encourages it. For example, in the chapter on *The Original Play* we have the youngsters let loose in an historical environment, and allowed to fill in the details. Their conversation is genuine gag invented to meet the needs of the case. The little performers are expected in fact to live through the scenes that they portray. Their words and actions have to be consistent with all the known facts, but within these limits the youngsters are free to do and say what they think best. The work of the Censor is here quite clear. She must interpose to prevent any glaring anachronisms or contradictions of the recognized historical conventions. But in so far as the Censor does not interfere the pupils are free. The lesson, in fact, is nothing more nor less than a day-dream in a more than usually active form. It implies a full enjoyment of the freedom of expression without the danger of the relaxing effect of a merely passive experience. The youngsters are quite active; they have to think out processes as well as to exemplify results; they fulfil the conditions of the justifiable day-dream.

It is probably well that teachers distrust the day-dream so much as they do. Their natural tendency is to throw in their influence on the side of the Censor, and this, no doubt, is right. The tendency to overdo day-dreaming is probably best combated by strengthening the inhibiting power of the Censor, even when we consider the matter mainly from the moral point of view. But the same is true when we consider the subject matter of the dreams. In history, for example, the greater the number of facts within the circle of the pupil's knowledge the greater the strictness of the Censor. Yet this increased strictness, since it results from the greater mental content of the pupil, is not felt as a troublesome external interfering force. It is made, as it were, on the premises, and exercises its power from within.

Freud makes a blunt distinction between what is in the consciousness and what is not. He does not favour the purgatorial state of the sub-conscious. What is specially needed at present to make his theory of practical use to teachers is a careful examination of the relation between his "unconsciousness" and his "consciousness" as states that may be said, in a figurative way, to have a spatial relation to each other. The function of the Censor, the Cerberus of consciousness, becomes much more easily defined if we admit an intermediate state in which are to be found ideas that have just been in consciousness or are just on their way into consciousness. These ideas though not at present themselves in consciousness are exercising a certain effect upon ideas that are at the moment in consciousness. These nascent or moribund elements just below the threshold of consciousness are of the first importance to all who wish to acquire the art of regulating day-dreaming by manipulating the Censorship. A study of the processes involved offers a very promising field for some of our ambitious young experimenters in educational psychology.

QUALIFIED AND UNQUALIFIED "FORMAL TRAINING."

By Professor C. SPEARMAN, Ph.D.

1. The Meaning of "Formal Training." It would not be easy to find any problem of more urgent importance for education than that which usually passes under the name of "formal training." A large number of pedagogues and psychologists alike point out that the system of education prevalent generally in the civilized world—and that has been so for centuries—is based on the assumption of such formal training, whereas they roundly declare it to have been proved to be impossible.

In this critical situation, so urgently demanding the co-operation of all who care either for educational efficiency or for psychological truth, it is distressing to find the real point at issue being obscured by mere verbal confusions, and its investigation in danger of degenerating into a vulgar logomachy. Instead of the partisans really meeting in combat, each side is knocking down a straw dummy of its own manufacture; the formalists are defending one thing, while the anti-formalists are attacking another.

To escape from this confusion, the first business is to get a clear idea of what is meant by "formal." My own simple plan was to look in a dictionary. There I found five different definitions, but almost all were hopelessly beside the mark; no one is quarrelling as to whether education should be "normal, sound, sane," nor whether it should be "made, framed, or done with proper dignity and impressiveness."

The least unpromising of the definitions seemed to be the following: "of or pertaining to form as opposed to matter." Accordingly, I now looked up "form." This time, there were no fewer than nineteen different meanings given, varying from "the style and manner of artistic expression" to "the slight depression made in the grass or the like by a hare."

Beneath this variety, however, it was possible to detect a common underlying principle. Throughout, the view was implied that things manifest two features: the one is some substantial "material," while the other is some "form" in which the divers portions of this material happen to be related to one another. Thus, the form of a triangle consists in the relations between the three constituent lines; that of a line consists in those between the constituent points; that of a government is contained in the interrelations of the governing and governed persons; even that of a hare may be said to be made up of the relative positions of the blades of grass mimicking the corresponding relations of the limbs of the hare. In this sense, "form" is that aspect of a thing which, when represented mentally, becomes what Ehrenfels and others have termed its "Gestaltqualität."

But in this fundamental signification, "form" has an extremely wide range. It embraces the whole of the material universe except its finally constituent atoms or ether, and the entire psychic universe except such ultimate component as sensations, feelings, &c. In *this* meaning, the educability, either of our presentations of form, or of the form of our presentations, has been doubted by no man in his senses.

Failing to identify educational formalism with this the fundamental import of the word, I hoped at least to be able to connect it readily with some more special and accidental usage. In vain. Not one of the nineteen headings nor of their manifold sub-headings proved even a tolerable fit for the actual pedagogic controversy.

It thus became evident that the formality of education must be taken in no commonplace meaning as current in dictionaries, but in some more esoteric one truly rendered only in the writings of the formalists themselves. And here, in fact, the word does seem to be employed, not indeed in conformity with the dictionary, but at least with very tolerable clearness and consistency. Take the following declaration of faith by one of its champions: "The power and tendency of the mind to observe is increased by observing; to imagine, by imagining; to judge, by judging; to reason, by reasoning; &c."[1] Here and elsewhere, the distinction seems not to be between what are ordinarily called material and form, but rather between the object of thought (including both material and form) and the mind's dealings with this object. If put into terms of more modern descriptive psychology, the distinction would approximate to that between the "content" and the "act" of cognition. When, for example, a fly is observed on the wall, the fly on the wall is the content, but the observing the act.[1]

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[1] White, *Elements of Pedagogy*, pp. 119-120.

If we curiously inquire how a word, which for the rest of men denotes a system of relations, came for educationists to mean mental act as opposed to content, the responsibility seems to fall on the shoulders of Kant. It was a cardinal theorem in his philosophy, that the material of experience is supplied by things-in-themselves, but that this material undergoes a process of moulding in certain "mental forms," which are *a priori* constituents of the mind; thus the form is the product of the mental act.[2]

It must be conceded that the Kantian philosophy afforded the educational doctrine not so much a logical basis as a decorative garment. To no purpose should we search the treatises on teaching for the genuine categories of Kant; nowhere are instructions given and exercises framed to develop the child's power of perceiving "unity," "inherence," "randomness," &c. In practice, there has been a quiet but unanimous retention of the furniture of the old theory of faculties: observation, imagination, reasoning, and the like.

Passing over this historical point, it does seem plausible enough that the training should develop the act rather than the content, that the power of observation should be improved rather than the flies. This view is at any rate more intelligible than that of the materialistic school, who have ignored the act altogether.

2. **The evidence of experiment.** The problem thus acquires the prime necessity for solution, distinctness. Can the "form" taken in the sense of "act" be developed independently of the "material" taken in the sense of "content"? Does the training of the form in combination with one material afterwards prove effective when the same form is combined with another material? To use the common expression, is the training with one material "transferred" to other materials. Here is a definite question that we can put to nature, in other words, submit to experiment.

Despite all the controversy that has taken place, I venture to say that nature's answer has never really been ambiguous. It has everywhere and always been, yes.

Take, for example, the experiments of Fracker, under the direction of Seashore; two materials were selected, a series of greys and a series of musical tones; also two forms or procedures of memorizing were devised. It was demonstrated that training given in either procedure was actually transferred to the same procedure with the other material. Quite similar results were obtained in our own laboratory by Dr. Sleight; modes of directing the attention or utilizing rhythm acquired in connexion with one material were found afterwards to be transferred to other materials.[3]

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[1] See especially the works of Husserl, Meinong, and other pupils of Brentano.

[2] Cf. Lewes, *The Study of Psychoolgy*, Ch. X: "The mental forms."

[3] Brit. J. Psychology, IV, 1912, p. 386.

So far, then, the formalists have every reason on their side. They would be justified in defending this position with tooth and nail—if only it were attacked. But their leading opponents, investigators like Sleight and Thorndike, seem just as convinced of it as they are. There appears to be no denial that this is the truth, but only that it is the whole truth. The attack is not against formalism utterly, but against unqualified formalism.

3. **Transference is not peculiar to form.** The first of these qualifications is that the transference of training, though truly enough exhibited by the form, is not its peculiar prerogative; on the contrary, it holds good no less of the material. In Fracker's experiments, the effect of training persisted, not only when using the same procedure and another material, but also when using the same material and another procedure.

In fact, the whole notion is delusive that, while the act of thought is in the thinker, the content is outside him. The content or material is as truly mental as the act. To take our former illustration, there may or may not be real flies in existence—this is a difficult and perhaps insoluble problem of metaphysics—but about the occurrence of flies as mental presentations and about the dependence of these presentations on subjective conditions there can be no reasonable doubt whatever.

But hereby, formal education is at once shorn of its great seduction, superior economy. The claim made on its behalf is that any training of the form would be effective universally, whatever kind of material should thereafter present itself. But just the same claim might be made for "material" training; this appears effective for whatever sort of form should happen afterwards to be needed. As far as economy is concerned, all sorts of training, formal, material, or a mixture, would appear to be about on an equal footing.

4. **The amount of transfer is inverse to the amount of change.** The second of these qualifications is that the question of transfer must always be regarded quantitatively: not its bare occurrence, but its amount, is the important matter. The usual formalist manner of asserting the transfer of training to a new material conveys the impression that the effect of training reappears undiminished. But this is entirely opposed to the experimental results.

Let us pick three simple cases from Sleight's work. In case I, the children repeat a piece of poetry a certain number of times with a view to being tested afterwards in their remembrance of it. Here, the process in the test is extremely similar to that in the learning; both consist in saying the same piece of poetry in the same manner, form and material alike remaining nearly unchanged. The learning and the testing may be symbolized by two circles almost coinciding with one another.

In case II, the children again learn poetry; but subsequently they are tested in their power of memorizing a *new* piece. That is to say, the test process is no longer identical with the original learning process; the form is still the same, but the material now only possesses a certain resemblance. If the two processes are again represented by circles, they must be drawn with only a small segment in common. Quite accordingly, Sleight found that the benefit of the training was here correspondingly small; the children reveal only a slightly greater facility for memorizing than before; they make, on an average, about 4% more marks when tested.

In case III, the original learning is as before, but the test this time concerns the power to memorize a piece of prose, instead of poetry. Again the form is the same for test and training, but the material has a still smaller resemblance than before; the two must now be symbolized by circles barely meeting at all. Correspondingly, Sleight still detects some transfer of training, but estimates it at less than one hundredth part of that found in case II. Nothing but the most elaborate statistical treatment could reveal its presence at all.[1]

It is evident that the training is indeed transferred from one material to another, but only in proportion to the similarity between them. This fact is usually expressed by saying that the transfer is in proportion to the amount of elements common to the training and the test. All training has an indefinitely wide range of effect, but it is like the illumination proceeding from a focus of light; the further from the focus, the larger becomes the area covered, but the weaker the illumination.

What, then, shall we say of such formalist doctrines as "the power to judge is increased by judging"? Clearly, two acts both properly included under the word "judging" need not therefore possess any great similarity. If we compare by actual introspection the processes involved in some actual judgment of Latin grammar with that in judging the best market for a certain goods, the resemblance will certainly be found far less than even that between memorizing poetry and memorizing prose. We should expect the amount of transference to be altogether inappreciable. And this deduction is confirmed by more direct evidence, particularly by that of correlations; these prove that the mere fact of two performances coming under such a general category as judgment, &c., produces no tendency for those persons who have attained to excellency in the one to excel in the other also. Our formalist doctrine appears, therefore, to be gravely misleading.

5. **Transference is not always improvement.** This qualification, though important enough, admits of brief disposal here. Even when the effect of training at one performance does make itself felt at different ones, this is by no means always an advantage. For instance,

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[1] *Brit. Journ. Psych.*, IV, 1911, p. 454.

Judd found that training to align a ruler under certain conditions, far from improving, distinctly disturbed the power to align it under other conditions.[1] Sleight found similarly, that various procedures of memorizing acquired in the course of training, such as the mode of distributing the attention, the usage of rhythm, &c., often were hurtful when memorizing something different.[2] Fracker reached the same conclusion.[3] The experience is, indeed, frequent enough among devotees of games; the man who has been playing tennis on grass courts complains that he has been put off his game for hard courts.

6. Need of separation for transfer. The next and last qualification has been expressed by Sleight as follows: "to involve transfer, the common elements must be separable from the complexes in which they occur." When quite inseparable, the transfer disappears. On the other hand, by carefully cultivating this separation, the transfer can be largely increased. One of the most striking instances is the development of procedure into a clearly conceived *method*: this thenceforth becomes an independent, and sometimes exceedingly useful, tool of thought. An interesting example has been furnished by Judd, who found that children could be taught to hit a mark lying in water just as readily by rule of thumb as by a clear method based on the knowledge of refraction of light. When, however, he changed the depth of the mark below the surface of the water, the rule-of-thumb scholars had to do all their learning over again, whereas those who had learnt by the distinct method were soon as successful under the new conditions as under the old ones.[4]

An even more important instance of separating an element from the complex in which it occurs is the evolution of particular impulses into a general maxim or ideal. For example, the notion has long been held and exploited, that training in co-operation at school games will eventually lead to the wider co-operation of patriotism. The feebleness of this assumption was demonstrated by the experiment of Squire, who found that neatness cultivated in one special branch of study had no tendency to irradiate into other branches.[5] But Ruediger was able to show a great change in this respect when the impulse to neatness was isolated and developed into an independent maxim.[6] In the same way, it seems not impossible—however far from realization at present—that eventually by skilful arrangement the habit of co-operating at games should really be of assistance in forming an independent ideal of self-sacrifice by the individual for the society.

The efficiency of such an ideal depends largely, of course, on the strength of its emotional basis. But this is no justification for the frequent assertion, that emotion has a *direct* influence on transfer. Students may work themselves up into a sympathetic frenzy at inter-

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1. *Educ. Rev.*, June, 1908, 36-7.
2. *Brit. Journ. Psych.*, IV, 1911, 387.
3. *Psych. Rev.*, Monthly Supplement, IX., 1908, 56.
4. *Educ. Rev.*, June, 1908, 36-7.
5. See Bagley, *Educative Progress*, 208.
6. *Educ. Rev.*, Nov., 1908.

collegiate boat races, without thereafter displaying any the greater willingness to pay their taxes to the state.

7. Piecemeal training. So much for "formal" training in the sense usually meant by educationists and psychologists, namely, the development of the "form" or "act" with one material in the expectation of the improvement being transferable to other materials.

But it may be useful to conclude by pointing out that there is another very different signification of "formal" training, especially current among teachers, whereby confusion is made worse confounded. Take, for example, manual education. Instead of putting a boy immediately to work at making, say, boxes, many teachers prefer to commence the constituent operations separately; to give some lessons in sawing, others in driving nails, others again in planing, &c. But such piecemeal training has been denounced as "formal," although there is no longer any question of transfer to dissimilar material; the hammering, nailing, &c., may be quite the same whether or not an eventual box is completed.

There is nothing to say against this use of the word in itself; the procedure is quite appropriately termed "formal" in the dictionary signification of "having an outward show, but lacking reality." But there is great danger of this meaning being confused with the other one of which we have been talking hitherto.

An instance of the confusion is afforded by the recent application of the term "formal sense training" to the procedure of Mme. Montessori. The application is justified in the sense of piecemeal only; there appears to be no intention on her part of transferring the training to a dissimilar material; this remains from beginning to end the sensations; in her own words, "education of the senses has as its aim the refinement of the differential perception of stimuli by means of repeated exercise."

But many of her supporters adopt the "formal sense training" in the other far more ambitious meaning. We have lately been told that "sense training . . . is really brain training" and therefore "would lead to a higher average of mental equipment."[1] Still larger claims fill the columns of the newspapers; in these, a man of eminence in his own department recently informed the public that in consequence of the present lack of sense training "geniuses would become fewer in every profession."[2]

Now these wide claims for sense training and this depressing prophecy are hard indeed to reconcile with the evidence of pedagogical and psychological research. Whereas the modest piecemeal training is not only possible, but seems indispensable for fine technique of any sort. It will not be abolished until the musician is persuaded to renounce his finger exercises, the soldier to cease from firing at peace targets, or the cricketer to give up practice at the nets.

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[1] *The Montessori Principles and Practice*, by Culverwell, Professor of Education, p. 59.

[2] A recent number of the *Daily Telegraph*.

To sum up, the solution of the vital problem of formal training is impeded by confusion as to what is meant thereby. The word is used by educationists in at least two distinct senses, and the more important of these is widely divorced from the word's ordinary usage. Having overcome this verbal difficulty, there emerges another obstacle to scientific progress, namely, that the two chief opposing schools are at cross purposes ; the one is defending what may be called qualified formalism, while the other is attacking unqualified formalism. Passing from this bootless controversy to the observation of the actual facts, especially as elicited by experiment, these prove to be perfectly unanimous and lucid.

The way is clear, then, for both parties to join hands for a common assault on the great problem still unsolved, namely, how these facts are to be utilized in the re-ordering of our educational system.

SOCRATES ON INTELLIGENCE.

By P. B. Ballard, M.A.

THERE is little doubt that the dream itself was due to the lunch ; but the content of the dream was determined by other things. It was holiday time. In the morning I had taken a long and solitary walk ; and, pondering over the question of the discipline of the mind, had followed trains of thought which led to flatly contradictory issues. After a somewhat hearty lunch I retired to my study and took down from the shelves a volume of Jowett's translation of Plato. The book rested on the broad arm of my reading-chair, and as I turned over the leaves I was overcome with drowsiness and fell into a profound sleep. And as I slept I dreamed a dream. And I thought I stood in the streets of a strange city, which by some obscure process of reasoning or intuition I knew to be the ancient city of Athens. And of those who passed along the sunlit street two men specially arrested my attention. One of them was short and ungainly, with a snub nose and protuberant eyeballs. His feet were bare and his simple cloak old and weather-stained. Indeed his unattractive aspect formed a marked contrast with that of his companion, who, although a somewhat older man, suggested by his dress and general bearing the old Greek ideal of of a gentleman—*καλοκἀγαθός*. Yet was the ill-favoured one not devoid of a certain native dignity; and I had no difficulty in recognizing him as Socrates. Who the other was I could merely surmise. I followed them for some distance until they turned into a porch and knocked at a door of finely-chased bronze. Presently the door was opened by a slave, and passing along a narrow hall we abruptly entered a room equipped with book-shelves, a pedestal desk and oak furniture of modern design. A severe-looking person in spectacles who was sitting at the desk rose to greet his visitors and bade them be seated.

The anachronisms of the dream are glaring and palpable; but during the dream itself they not only failed to astonish me: they entirely escaped my notice. It seemed quite right and fitting that Socrates should be conversing in English with a black-coated gentleman who quoted Tennyson. There appeared no historical inconsistency in the reference to prospectuses, school examinations and medical inspection. Nor did the fact in the least surprise me, that although I was present the whole time nobody seemed to take the slightest notice of me. Of the conversation that took place in that strange-familiar room my recollection is clear and vivid, and a faithful record thereof is herewith given:—

Soc. Hearing of your fame as a schoolmaster, Sophisticus, I have come to consult you about my two sons, one of whom is nine and the other ten years of age. I have brought with me my old friend Crito, who also takes much interest in the lads. We wish to know how best they may be trained in wisdom and virtue.

Soph. Well, Socrates, I do not think you could do better than send them to my school.

Soc. Many of my friends say the same thing; and that, indeed, is why I came to you. You will, I am sure, put it down to pardonable anxiety on the part of a father if I seek, by asking you questions, to assure myself that my sons will get at your school a sound education.

Soph. You may ask me as many questions as you like, Socrates, and I will do my best to answer you.

Soc. Tell me, then, Sophisticus, what will my boys learn in your school?

Soph. They will learn everything that an educated man should know. There is my prospectus. You will see therein the full list of subjects.

Soc. But I see nothing here about the teaching of virtue. Is not that one of the subjects?

Soph. We do not put that down, Socrates; but we do teach our pupils to be good. We explain to them the sacred writings, and we look very carefully after their morals.

Soc. And I see nothing here about wisdom. You will admit that a boy may know a large number of things and yet not be truly wise.

Soph. I readily admit that. Although it is not put down in my prospectus, that is really the supreme aim and purpose of my school. We have discarded the old-fashioned word "wisdom," and use the word "intelligence" instead; but it means the same thing. My boys get a good training; their intelligence is awakened. That is in fact the chief way in which my school differs from most other schools. It is not a place where "knowledge comes but wisdom lingers." Our aim is not merely to prepare boys for examinations; what we really pride ourselves on doing is in producing general intelligence.

Soc. I begin to understand. But it is a pity you do not put this down in your prospectus, Sophisticus, for I have for years been looking for a school where they train intelligence, as you call it, and have never found one. I see, however, that you advertise the fact that pupils are prepared for certain examinations.

Soph. If I did not put that down, Socrates, I fear I should get no pupils at all. But what I really try to cultivate is general intelligence.

Crito. Don't you see, Socrates, that that is the explanation he reserves for the parents of children who fail at the examinations.

Soc. That suspicion, Crito, is unworthy of you, and does injustice to a great schoolmaster like Sophisticus. I indeed prefer to believe that he seeks to produce general intelligence, and that success at examinations is a sort of by-product.

Soph. You state the case truly, Socrates.

Soc. But tell me what you mean by giving the boys a good training.

Soph. I mean that we cultivate their mental powers. We teach them not only to know, but to do. We make them remember better, observe better, and reason better, and, to put it generally, we make them better thinkers.

Soc. That, indeed, is a great achievement. But you must not bewilder me by telling me so much at once, for I have a bad memory, and can only deal with one thing at a time. Tell me how you make a boy more observant.

Soph. By giving him practice in observation, of course.

Soc. By practice, you mean that he repeats the same act over and over again?

Soph. Just so.

Soc. And he does it better the second time than the first?

Soph. Yes.

Soc. And the third time better than the second?

Soph. Precisely.

Soc. But is not this what we call forming a habit?

Soph. I suppose it is.

Soc. Observation, then, is a habit?

Soph. I have never thought of it in that light, Socrates, but I think you are right.

Soc. I do not say that I am right: I am trying to find out what you can tell me about the matter. You do not mind my putting these questions?

Soph. Of course not, Socrates. I have heard of your custom of questioning people, and I am glad to have an opportunity of hearing you.

Soc. Tell me, then, does training consist in anything else but the formation of habits?

Soph. It depends on what you mean by habits.

Soc. Does not an act tend to become easier by repetition?

Soph. Yes.

Soc. And it is true of an act of thought, of feeling, or of will, as well as of a physical act?

Soph. Certainly.

Soc. Shall we agree to call any act that has been improved by practice a habit?

Soph. It seems to be a suitable name for it.

Soc. Then training consists in forming habits?

Soph. Yes.

Soc. And nothing else?

Soph. And nothing else.

Soc. And is intelligence a habit?

Soph. Well, I should not be disposed to call intelligence a habit. It seems to me to be less a habit than observation even.

Soc. And yet you said that you could train intelligence.

Soph. There does seem to be a contradiction somewhere. And yet I am sure I can train intelligence.

Soc. Let us try again. What is intelligence?

Soph. Now you have asked me a very difficult question. I can pick you out my most intelligent pupils, but I cannot tell you off-hand precisely in what this intelligence consists.

Soc. Are they necessarily intelligent if they can read well?

Soph. No.

Soc. Or write, or draw, or sing well?

Soph. No.

Soc. Or repeat poetry, or remember history?

Soph. No.

Soc. Or do arithmetic?

Soph. It depends upon the kind of arithmetic.

Soc. What kind of arithmetic can an unintelligent boy do?

Soph. Simple straightforward sums, such as the common rules which he has been taught.

Soc. And what kind can an intelligent boy alone do?

Soph. Problems.

Soc. And what is the essential difference between the two?

Soph. The unintelligent boy can do sums which he has previously practiced, or has at least been shown how to do. The intelligent boy can do sums which are not quite the same as any others which he has done or been shown how to do.

Soc. And is intelligence shown in any other subject besides arithmetic?

Soph. Certainly, a boy may show intelligence in geography, or history, or science, or handwork, or indeed in any subject which is not purely mechanical.

Soc. And is it the novel part that requires intelligence in other subjects as in arithmetic?

Soph. That is right, Socrates, you have made it quite clear. It is the new, the unfamiliar, part of any given situation that calls for intelligence on the part of a boy.

Soc. I am glad to hear you say that, Sophisticus, for that simplifies the case. Tell me, does training have to do with the familiar, or with the unfamillar? With the old or with the new?

Soph. I do not see what you mean.

Soc. Does not training involve doing the same thing over again?

Soph. Yes, we agreed that it was based on practice.

Soc. And when you are trained to deal with any kind of situation that situation is no longer new? it is no longer unfamiliar?

Soph. Quite so.

Soc. Then a trained faculty has to do with familiar material?

Soph. Yes.

Soc. And intelligence deals with the unfamiliar?

Soph. Yes.

Soc. Then intelligence cannot be trained?

Soph. No, Socrates, I will never admit that. There must be some flaw in the argument. I think I see what it is. The situation which you call new or unfamiliar is never wholly new. There is always much that is old, and rarely more than a little that is new.

Soc. But the unintelligent pupil can deal with the old part of the situation if he has been trained to it?

Soph. Yes.

Soc. And if the new part is not dealt with, intelligence is not shown?

Soph. Quite so.

Soc. Then it is only intelligence that can deal with the new part?

Soph. Yes.

Soc. And no training can enable us to deal with the new?

Soph. It seems so.

Soc. Then we are again back in the same position. Intelligence cannot be trained.

Soph. Although I cannot refute your argument, Socrates, in your own way, I can do it in another way. If you will send your boys to me you will find that at the end of a year they will be much more intelligent than when they came; and I call that a much stronger argument than even you can devise.

Soc. If you can do that I will believe that our discussion has somehow strayed from the truth. I will think over what you say. Come, Crito, let us depart, for I see that Sophisticus is impatient of all this talk about things which he can do but cannot explain.

(After the usual greetings they take their leave.)

Crito. Tell me, Socrates, do you really think that intelligence cannot be cultivated?

Soc. I should be glad to be convinced to the contrary. I fear there were many errors in our discussion with Sophisticus, but not of the nature that you imagine. You noticed that we seemed to agree to call observation a habit?

Crito. I noticed that, Socrates.

Soc. And do you think it is a habit?

Crito. I thought so at the time, but I don't feel so sure about it now.

Soc. Tell me, Crito, is breathing a habit?

Crito. We never call it a habit.

Soc. But is it not an act which we are continually repeating?

Crito. Certainly.

Soc. How, then, does it differ from an act which everybody calls a habit, such as the trick which some people have of frequently stroking the beard?

Crito. Only some people stroke their beards, but everybody breathes.

Soc. And why does everybody breathe?

Crito. He cannot help it, Socrates. It is a natural power which he brings with him when he comes into the world.

Soc. And why does not everybody who has a beard stroke it?

Crito. Because it is a habit which some acquire, and some do not.

Soc. A habit, then, is a personal acquisition?

Crito. Yes.

Soc. And in that sense breathing is not a habit, but a natural power?

Crito. Yes.

Soc. Can a natural power be improved, do you think?

Crito. I think it can, Socrates. My grandchildren who are now at school have breathing exercises every day. And the physician visits the school, and examines the children's noses and air passages, so that obstructions may be removed. People, too, who have their voices trained say that attention is paid not to their throats where the sound is produced, but to the mechanism for breathing. They are in fact taught to breathe better.

Soc. Tell me any way in which children at school are taught to breathe better.

Crito. They are taught to use handkerchiefs, and to breathe through the nose, and to breathe deeply.

Soc. And is not the proper use of a handkerchief a habit?

Crito. Certainly.

Soc. And breathing through the nose, rather than the mouth, is that a habit, too?

Crito. It is a habit.

Soc. And what shall we say for breathing deeply, cannot that become a habit?

Crito. It can.

Soc. Then, shall we be right in saying that a natural power like breathing can be improved by forming certain habits which render that power more effective?

Crito. We shall be right in saying that.

Soc. And is not the same thing true of observation, which we have agreed to regard as a natural power?

Crito. Yes.

Soc. And is not intelligence a natural power inasmuch as everybody possesses it in some degree?

Crito. Yes.

Soc. Then intelligence can be improved in the same was as breathing and observation can be improved?

Crito. It seems so.

Soc. Then Sophisticus is right after all, and intelligence can be trained.

Crito. And yet, Socrates, it seemed to me while you were arguing with Sophisticus that the opposite was true.

Soc. May not both conclusions be true?

Crito. How is that possible, Socrates?

Soc. I fear, Crito, that we have been confusing ourselves and obscuring the argument by using the same words in different senses. When we talked about observation we at one time assumed it to be a simple power which could either be trained or not be trained; at another time we spoke of it as though it were a group of distinct and separate powers, some, if not all, of which could be trained. And in the same way we have been deceived by different meanings of the word intelligence. I think, Crito, that you and I had better go to school again to learn the right use of words.

Crito. I am quite willing to go with you, Socrates, provided you can find somebody to teach us.

Meanwhile we were walking along narrow streets whose bare and windlowless walls were relieved here and there by doors that opened outwards into the street. One of these doors, more pretentious than the rest, was protected by a porch, near the entrance of which stood one of those images of Hermes which Alcibiades was supposed to have mutilated. As we passed this porch, which we did just as Crito had finished speaking, I touched the image with my hand and it fell to the ground with a loud crash. So loud indeed was it that I woke up with a start, and looking down I saw the volume of Jowett's Plato lying flat upon the floor.

IMAGERY IN IMAGINATIVE LITERATURE.

(Continued).

By E. Allison Peers, Mill Hill School.

It has been shown in the preceding article that imagery does function in imaginative literature, and the question must now be raised as to how the teacher may aid this by judicious treatment of the matter in hand. It may be that the mere reading of a passage (such as the lines by Rossetti previously quoted) will awaken the greatest possible number of images, or it may be that a short and systematic exposition of it by the teacher will be of more service than the first reading. Either view might be held with reason. It is hoped that the following experiment will throw the balance of probability on one side.

Experiment III.—The boys were told, when they had finished writing the answers to the second series of questions, that the eight lines they had just heard were part of a sonnet, and that six lines remained to be read. As they had apparently not completely grasped the whole of the sense of the octave, they were asked to listen to the sestet, again very carefully, which was then read deliberately and with expression, as before. They again wrote answers to the question, " What images, if any, and of what kind, were aroused in your mind on hearing this passage ? " and when this was done the sestet was again read through with short explanations, especial care being taken to dwell for a moment on each of the most prominent images. The class was now asked to write down any fresh imagery which they had experienced, and also whether they had grasped the sense of the passage before or after the explanation, or not at all. The following is the conclusion of the sonnet, and the full results of the experiment are appended below :

> " She sinks into her spell, and when full soon
> Her lips move, and she soars into her song,
> What creatures of the midmost main shall throng
> In furrowed surf-clouds to the summoning rune :
> Till he, the fated mariner, hears her cry,
> And up her rock, bare-breasted, comes to die ? "

EXPERIMENT III.—CLASS I.

Subject	Imagery as tested in Experiment I.	Answers to the Question : "Did you grasp the sense before or after explanation, or not at all ?"	Result of Reading Passage. (Imagery from Introspection of Subject).	Result of Explaining Passage. (Added Imagery from Introspection of Subject).
A	A—Str. ... V—Med. ... O—Wk. ...	On second reading and explanation only.	Saw siren and ship, and heard waves.	Saw mariner climbing up the rock.
B	V—Str. ... A—Med. ... O—Wk. ...	Partly at first, and more clearly afterwards:	Saw hardy seaman, with shirt open at front and bronzed chest, with sea foaming on granite rocks in background.	Saw ship with bows in air and masts broken.
C	V, A—Str. ... O—Wk. ...	" "	Saw waves and mariner, heard waves and heard music stop.	Second reading made appearance of mariner clearer.
D	V, M—Str. ... A—Med. ... O—Wk. ...	" "	Saw man appearing above edge of cliff.	Appearance of man clearer (broad-shouldered, brown, big, fierce expression). Also saw woman singing.
E	V, A—Med. ...	" "	Saw the waves washing, and the wrecked mariner rising on the shore.	Heard "the mellow rising of the voice—the 'soaring.'"
F	V, A—Med. ...	" "	"First time saw surf breaking on shore, and mariner jumping on shore from wreck. Heard song starting softly and swelling out—echoes.	"Picture of man was repeated—more clearly."

EXPERIMENT III.—CLASS II.

Subject	Imagery as tested in Experiment I.	Answers to the Question: "Did you grasp the sense before or after explanation, or not at all?"	Result of Reading Passage. (Imagery from Introspection of Subject).	Result of Explaining Passage. (Added Imagery from Introspection of Subject.)
A	V, M, O—Wk.	A little at first; all afterwards.	None given.	Saw very rough day and waves breaking on a hill, and in the surf a man appeared half-naked.
B	V—Med. A, M, O—Wk.	All first time.	Saw "man struggling up rocks to safety, with the waves trying to draw him back."	"A man lying dead at the top of the rocks."
C	V, A—Med. M—Wk.	A little first; all of it afterwards.	"Rather faint" (did not specify *what* images).	
D	V, A, M—Med. O—Wk.	A little first; all of it afterwards.	Had images each time, but did not specify what images.	
E	V, A, M, O—Wk.	All first time.	None given.	"Saw the surf-clouds and the mariner, and heard a song."
F	V, A, M—Med.	A little of it at first; all afterwards.	"Sharp crags of rock jutting out of a restless sea," and "a girl *standing* on the edge of a rocky cliff, waving her arms and singing beautiful songs, while her lyre lies beside her on the ground."	Heard "the roar of the breakers and the showers of spray."

EXPERIMENT III.—CLASS III.

A	V—Med. A, M, O—Wk.	After explanation.	"Heard singing." "Saw mariner throwing clothes off."	... ...
B	V, A, O—Med. M—Wk.	After explanation.	Saw shipwreck.	"Man being flung about by a stormy sea." "Hear song of the sea."
C	V—Str. A, M, O—Med.	Before explanation.	Saw waves; heard song.	... ...
D	V, O—Med. M—Wk.	After explanation.	Saw mariner washed up.	Many other images (not specified).
E	V—Med. A, M—Wk.	Partly before } explanation Completely after } explanation	Picture very faintly.	Heard cries of mariner.
F	V—Med. A, M—Wk.	After explanation.	... ...	"Saw man being washed up on shore."

EXPERIMENT III.—CLASS IV.

Subject.	Imagery as tested in Experiment I.	Answers to the Question: "Did you grasp the sense before or after explanation, or not at all?"	Result of Reading Passage. (Imagery from Introspection of Subject.)	Result of Explaining Passage. (Added Imagery from Introspection of Subject.)
A	V, A—Med. O—Wk.	Nearly all first and all second time.	"Saw woman playing"; heard cries of "people as they come to hear the music." Saw "ship wrecked on the rocks. People drowning. Still the woman plays until everyone is drowned."	"Delight of siren to see them drowned." "Man trying to reach shore but fails." Hear "the attracting music."
B	V, A—Med. M—Str. O—Wk.	Gave general sense in a paraphrase at the first reading, and were able to explain much more clearly after the explanation	Hears singing; "see mariner coming near to hear her and is dashed to pieces."	"Ship dashing against the rocks. The man takes off his clothes to swim, but is stopped by the rocks."
C	V, A, M—Med. O—Wk.		"Saw her start to sing and saw the birds come in flocks, and the animals throng round her, and the mariner climbing up the rocks from the sea. I heard the song of the siren."	"I saw the mariner in his ship dashed against the rocks, and swimming ashore."
D	V—Str. A, M, O—Med.	All first time.	"I saw her still playing as before (i.e., apparently repetition of same imagery). It is very misty over the sea. A man is coming towards her. Heard the waves."	"The man bare-breasted climbing down a cliff."
E	V, A, M—Med. O—Wk.	Nearly all first, and all second time.	"She is sitting in her usual place, playing her lute. She sees a seaman. She weaves her spell, and the seaman falls on his chest on the rock."	"The echoes of her song (heard). The man shipwrecked tries to swim. I hear a faint noise which grows and grows until it fills me with perfect joy."
F	V—Str. A, O—Med.	Nearly all first, and all second time.	Saw her singing, "with her head lifted towards the clouds. A man with bare breast climbing the rugged rocks. Heard high note of female rise and sink. Then all was still."	"The ship being dashed against the rocks, and a picture of the waves coming in in furrows, surf-tipped."

EXPERIMENT III.—CLASS V.

Subject	Imagery as tested in Experiment I.	Answers to the Question: "Did you grasp the sense before or after explanation, or not at all?"	Result of Reading Passage. (Imagery from Introspection of Subject).	Result of Explaining Passage. (Added Imagery from Introspection of Subject).
A	V—V.Str. ... A—Med. ... O—Wk. ...	All before.	"I can see her taking her lute and hear her singing quietly at first and then getting louder and louder, and all the fishes and sea monsters come crowding to the place where she was singing, coming on the big waves with deep furrows in between them, and I can see the foam and the waves come banging down on the land, and all the little fishes get put on land by them, and a shipwrecked mariner is then found on a rock where he has been thrown."	... ...
B	A—V.Str. ... V, O—Med. ... M—Wk. ...	All before.	"The cracking and creaking of the ship as she lay a wreck on the rock and the roaring of the surf."	"The song getting louder and louder; sea-monster, sea-snakes."
C	V—Str. ... A, M—Med. ...	Nearly all before. All afterwards.	"I saw the man throwing off his clothes. I saw the ship breasting the waves and heard a crash as she struck the rocks."	"I saw her playing her *flute*. I felt a vibration as she went full in her song. I saw the big monsters, little fishes and animals."
D	V, A, M—Med. O—Wk. ...	Ditto.	"Heard waves; felt them beat against the shore; smelt seaweed; saw waves and sea-birds as before."	"Saw fishes, man throwing off clothes and climbing up the rock."
E	V—Str. ... A, O—Med. ... M—Wk. ...	All before.	"I saw the maid playing and singing; I heard the notes and singing; I saw mariners being cast on the island."	"I saw the little fishes," and the shipwreck more clearly.
F	V, A, O—Med... M—Wk. ...	Not properly till after explanation.	... ...	"Saw man taking off his clothes, the fishes coming to hear the song, and the man climbing up the rock."

The value of the second or explanatory reading appears to be proved by these results. Twenty-three of the thirty boys receive images of various kinds on the first reading, and add appreciably to them on the piece being repeated; they record an increase either in the number of the images, or in the clearness with which they appear, or both. Three subjects report no imagery on the first reading (beyond, of course, that aroused during the reading of the octave), but a considerable amount during the explanation. Four boys, two of them strong visiles, record no additional imagery during the explanation, and each of these had already had a certain amount aroused by the reading. It would seem, then, that the exposition was of value.

But it may be asked whether it was the explanation of difficult words or the mere dwelling on the different images which caused this result. The points actually dwelt on during the exposition were as follows: (i) The contrast between "She sinks into her spell," and "She soars into her song"; (ii) enumeration of some of the "Creatures of the midmost main"; (iii) "Furrowed surf-clouds"; (iv) the reason of the epithet "bare-breasted." It is strange then to find that these are not the points which have had the greatest influence on the mind's imagery, that, in fact, direct suggestion has once more failed to achieve its end. The most typical answers to the last question in this experiment speak of images like "a ship with bows in air and masts broken," "a man lying dead on the top of the rocks," "heard the song of the sea," "second reading made appearance of mariner clearer." Only four boys saw during the explanation what seemed to me the clearest and most striking of all the pictures, viz.: the waves coming up in furrows breaking into clouds of surf on the shore. Only one of the other boys specifically states that he saw this image before explanation. Thus it appears to be the lingering over the passage rather than the explaining of it which adds so many images, though no doubt with careful insistence, and increasingly so after much practice, the teacher can cause any image to rise in the minds of the majority of those of his pupils who are capable of such imagery. Thus with Class V, I insisted particularly upon the "creatures of the midmost main," with the result that five out of the six boys took my suggestion. These (including the strong audile who had previously received but one single visual image) all received more or less vivid images of the "sea-snakes" and "the little fishes." The sixth boy (A) had already seen "all the fishes and sea-monsters come crowding to the place where she was singing." It may be that with a good reader the very inflection of the voice helps to convey images to his hearers, a view which is confirmed by my own experience as a schoolboy, and which applies more particularly to images of the auditory type.

II.

The question to be considered in this section, which deals with the second series of experiments conducted, is how far the use of imagery by pupils in the Literature Lesson helps or hinders their intellectual work, such as the understanding of the matter presented to them.

The answer to be given will depend to some extent on the nature of the material, and we shall first consider a particular kind of literature which may best be illustrated by examples. The essential point about it is that it bears no obvious argument but is particularly rich in imagery. It may therefore be assumed that if the boy's powers of imagery are to aid him in understanding the literature he reads, they will be of most service here. It is at least conceivable that a subject with strong visual imagery should be able to grasp the context of literature of this kind without necessarily appealing to his powers of reasoning. Many examples may be found in the poems of Shakespeare, Shelley, and Blake. The two extracts used in the following experiment are more suitable for purposes of investigation since they actually tell a story by presenting a series of word-pictures, and it is therefore comparatively easy to discover whether a class has grasped the significance of the imagery.

EXPERIMENT I.—The following complete extracts are taken from the "Chimes" of D. G. Rossetti:

A.

Brown shell first for the butterfly
And a bright wing by-and-by.

Butterfly, good-bye to your shell,
And, bright wings, speed you well.

Bright lamplight for the butterfly
And a burnt wing by-and-by.

Butterfly, alas for your shell,
And, bright wings, fare you well.

B.

Buried bars in the breakwater
And bubble of the brimming weir.

Body's blood in the breakwater
And a buried body's bier.

Buried bones in the breakwater
And bubble of the brawling weir.

Bitter tears in the breakwater
And a breaking heart to bear.

It will be seen that the first extract is considerably simpler than the second, and one would therefore expect it to be understood by more boys. The second poem, however, gives more scope for variations in its interpretation and the details are perhaps harder to fit into any rational version of the story. The "buried bars" and "body's blood in the breakwater" might be stumbling blocks to many a grown person, in whatever way he apprehended the poem.

The Classes taken were Classes I, II, IV and V of the previous series of experiments. Their characteristics may be briefly summarised thus:

	Average age.	Type of School.	General Intelligence.
Class I	17½	2nd Grade Secondary	Good.
Class II.........	15	2nd Grade Secondary	Good.
Class IV	13	Ex-VII. Primary	Good.
Class V.........	13	1st Grade Secondary	Moderate.

Each class, immediately before this experiment, had been tested for the various kinds of imagery as described in the previous paper. Extract A was read to the class slowly and distinctly, but only once. They were then asked (1) to state exactly what images of various kinds they had received while the poem was being read, and (2) to write down the story in brief. The same procedure was then gone through with Extract B. It may here be added that the boys of Class I were asked with regard to Extract A whether their apprehension of the meaning appeared to them to have depended on the imagery aroused in their minds. All the boys in this class had understood the lines perfectly, and answered the question, without the least hesitation, in the affirmative. It is of course a matter of doubt how far their replies may be regarded as trustworthy, but the suggestion conveyed in the question was at least a direct one and may therefore be supposed not to have influenced the boys unduly.

The actual results of the experiment are tabulated as follows:—

EXPERIMENT I.—CLASS I (AVERAGE AGE, 17½.)

Subject.	EXTRACT A.		EXTRACT B.	
	Imagery aroused.	Apprehension of story.	Imagery aroused.	Apprehension of story.
A	Each boy appeared to have seen all or nearly all of the images and to have grasped each part of the experiment correctly.		Saw breakwater, bubbling water, "weir lashing round and blood everywhere," remains of *boat* floating about, and *some* corpses and bones at bottom of weir."	Grasped story but gave it only through these successive images.
B			Saw "rushing river with weir," "large stone parapet," "sunken iron spars in the cement," "bones of a drowned man and blood," "weeping wife looking over the side."	The same (but added a few details).
C			Sees each thing he describes.	Omits the "buried bars," adds the suicide by drowning of the man's "most beloved friend."
D			Sees "river sweeping over weir, calm, deep pool at bottom, several poles sticking up from the water. A man is approaching the water. A splash and a body dashed against poles and over weir. It comes to rest near the bank and floats face upwards amongst the reeds."	Pictures the story vividly; adds considerably to the images and omits the last stanza.
E			*Rather dim*. This subject does not use his imagery very much but reasons out words like "bier" to find out why they are used. He then consciously fits together the details given and constructs a story.	"A man falls over the breakwater of a river where the swirl of the water sucks him in, evidently smashing his head. The weir became his burial place and his *bier*, i.e., *carried* him down to the sea. Evidently his relations knowing he came to the weir and finding his tackle (he was probably fishing) conclude that he is drowned. They weep over the place of his death."
F			Sees "vessel wrecked, foam, breakwater, stains of blood in water, a woman looking at scene and weeping."	Thinks that a vessel has been wrecked, and explains "bubbles of foam" as caused by wreckage. Rest not unusual.

With all subjects except E (and perhaps partly F) the images aroused by the reading practically supplied the whole of the story.

EXPERIMENT I.—CLASS II (AVERAGE AGE, 15).

Subject.	EXTRACT A.		EXTRACT B.	
	Imagery aroused.	Apprehension of story.	Imagery aroused.	Apprehension of story.
A	Saw lamp-post, and moths flying round.	Interpreted correctly.	" Saw a weir, bodi*es* underneath, people sorrowing on top of the breakwater."	Vague description, but otherwise satisfactory.
B	Saw " a beautiful butterfly flying towards a lamp."	Interpreted the story quite correctly.	Saw only the woman at the breakwater shedding tears.	Constructed a story not covered by lines.
C	"Saw it all in pictures. The butterfly comes out from the shell, flies away on its beautiful wings, flutters in the lamplight and gets burnt."	Ditto, except the last line (unimportant).	"Saw *indistinctly* the breakwater, bubbles in weir and tears falling in." (sic.)	Vague, and at one point contradicts lines.
D	Saw "a brown shell in the leaves of a bush, a brightly-coloured butterfly flying over many gay flowers."	Omitted fate of butterfly. Introduced a " boy anxious to improve his collection," and described the butterfly " hiding amongst the leaves of a bush."	Saw " large wooden breakwater, against which great foam-capped waves were breaking up."	Insufficient description, which omits the last stanza entirely.
E	Saw " the chrysalis and the butterfly burning its wings against the lamp."	Interpreted quite correctly.	Saw the breakwater, the *bier* and the sorrowing relatives.	Clearer than D's, but also omits last stanza.
F	Saw and described each scene.	Interpreted quite correctly.	Saw the whole story he relates, in pictures.	Fullest of all, adding parts not covered by the lines, but omitting and contradicting nothing.

EXPERIMENT I.—CLASS IV (AVERAGE AGE, 13).

Subject.	EXTRACT A.		EXTRACT B.	
	Imagery aroused.	Apprehension of story.	Imagery aroused.	Apprehension of story.
A	"See butterfly coming out of shell, then gradually adding wings to its body and flying away as a perfect butterfly."	Correct as far as seen in pictures, but nothing more given.	"A quiet place . . . breakwater . . . man drowned there . . . his body at bottom of river Blood colouring the water.	Quite covered by lines.
B	Sees butterfly leaving its chrysalis, flying away, hovering around bright light, burning its wing and flying away again.	Correct in all parts.	"I can see the *men* being washed ashore and hear the roaring of the sea."	"A ship has been wrecked and the bodies of its crew are washed against the breakwater."
C	Saw each detail in picture.	Correct in all parts.	Sees stakes of wood in the foundation of the breakwater; blood on the breakwater; bones on the breakwater.	A person killed in the breakwater and "sorrow and a broken heart to the friends of the person killed."
D	"Saw chrysalis smash and butterfly come out. Saw colours."	Insufficient and not altogether correct. "Butterfly comes out of chrysalis and spreads its beautiful wings. It is going into a brighter place and lighter."	Hear "whirl of sea in the weir." "See red sea and people on beach."	Correct, but "many relatives" crying, &c.
E	"All was still and I heard a faint crack, for the butterfly has come out of his chrysalis. It had now bright wings."	Only this part of the story given.	"I saw the water dark with blood; it was ghost-like to look at it."	"It was a horrid sight."
F	Sees: (1) butterfly drying itself by side of shell. (2) butterfly in mid-air, and (3) pinned out by a man bending over him. By the side is a lamp.	Incorrect: "The butterfly leaves his brown shell . . . and with bright wings flies away, and is caught and is killed."	"I cannot picture it."	"A ship has struck the breakwater and a man has made his grave there."

EXPERIMENT I.—CLASS V (AVERAGE AGE, 13).

Subject.	EXTRACT A.		EXTRACT B.	
	Imagery aroused.	Apprehension of story.	Imagery aroused.	Apprehension of story.
A	Saw the whole story he describes, in pictures.	"A little butterfly leaves his shell, in which he lies during the winter, and it flies by the lamplight and *in time it goes by the candlelight* and gets its wings burnt and then it dies."	Sees the whole story in images.	Full and correct; details added.
B	No images given.	Brief, omitting first couplet, but otherwise correct. Remembers afterwards, and adds the part omitted.	Smelt "a smell of human blood." Saw "the wind moaning over the place where the body lay." (Unfinished.)	Brief, but correct.
C	Saw the whole story in pictures.	Full and correct.	"Heard bubbling of water, and roar as it hit the breakwater. Felt the vibration, saw the dead bodies floating and heard them sink with a gurgling sound. Saw the water rising and falling by the side of the breakwater.	Correct, but makes the victim plural—"people coming by killed themselves there."
D	No images given.	"The butterfly after being in its chrysalis turns into a butterfly and then flies away."	"Saw things"—not specified.	Gives no account of the "body" nor of how the person met his death. Omits last stanza. Otherwise correct.
E	Saw images, but does not specify which.	Full and correct.	"I can see a widow weeping over her lost husband. I see the breakwater and that is all."	"Could not understand."
F	No images given.	Full and correct, but makes the butterfly die a natural death. ". . . it kept hovering round a lamp. And then after a few more weeks it dies."	"I heard the rushing of the water and the weeping of people." "Saw the bier."	"A man falls into the breakwater, and cannot get out, and is drowned."

It was difficult to make some of these boys understand what was wanted, and the question as to imagery, under Section A, seems to have been misunderstood.

THESE RESULTS MAY BE SUMMARIZED AS FOLLOWS:

EXTRACT A: Of 18 boys examined in detail—

7 (perhaps 8) saw all the images in the poem, and the 8 boys described the story correctly.

3 saw (apparently) no images—unless they misunderstood the directions given them—and 2 of these only gave part of the story.

7 saw only some of the images or saw images not directly suggested by the lines; the interpretations given by these subjects followed their images almost exactly.

It would seem, then, as if the interpretation of this poem depended almost entirely upon the subject's imagery. The work of F in Class IV and of D in Class II furnishes a most striking illustration of this. The subject F mistakes the fate of the butterfly; the mention of "lamplight" is less powerful in his mind than another image which has already arisen there, and when he comes to interpret the poem he is true to the original image. The subject D has strong images at the first stage of the poem. He sees the butterfly "in the leaves of a bush," and later "flying over many gay flowers." It is a far cry from such a scene as this to "lamplight" and the house, and the boy's imagery carries him no further. Realizing vaguely, then, that the butterfly's end is depicted in the last lines, he invents a fate of his own in accordance with his imagery.

EXTRACT B: In this 24 boys were examined in detail—

8 saw practically all the imagery of the poem, and the interpretations of all 8 were full and correct. Additions were sometimes made to the story.

5 received images other than visual. Of these, two interpreted the story correctly and 3 not altogether so.

9 saw a few only of the images. Of these, 1 interpreted vaguely, 4 gave only part of the poem, and 4 gave the story with variations not accounted for by the lines read.

Two boys (subjects E and F in Class IV) found the lines too much for them. E realized the horror of the picture so vividly that he was unable to give the story, writing only "It was a horrid sight." F, on the other hand, gave the sense in a vague way but could not picture the story in his mind.

The general results of the reading of Extract B bear out, though in a less striking way, the conclusion arrived at through the reading of the previous Extract, and we may take it that with literature of the type of "Chimes" the boy's imagery plays a very important part in the understanding of the matter read.

But all literature is not of this kind, and that literature even which contains the most vivid imagery can hardly be said invariably to resemble it. It is more usual to find that the images occurring in a fragment of poetry or prose do not convey the idea of the piece but develop or enrich it, or are in other ways merely incidental to the thought. We must inquire then, whether in dealing with literature of this kind the pupil's imagery will play an important rôle or whether it is negligible or even a positive hindrance in the process of interpretation.

Experiment II.—This experiment was performed with two classes, which, as they have no connection with those hitherto mentioned, we may designate respectively by the letters α and β.

Class α.—Number 15, average age 13, standard of intelligence good, was taken at random from the top half of Standard Ex-VII in a Primary School. Class β, number 12, average age 16, standard of intelligence good, was picked equally at random from the Vth and and Lower VIth forms of a First Grade Secondary School. In each case, before the "lesson" was begun, the Experimenter gave a simple explanation of the four types of imagery used in the first series of experiments, and ascertained that the class understood precisely what he meant. This might have taken ten minutes.

Each class was now told that the lesson consisted in the reading of several pieces of poetry, each of which contained one or more underlying ideas. They would be required to give these ideas as best they could, and also to state with regard to each passage any images which they received when it was read. An attempt was made to convey the suggestion indirectly that the interpretation and not the imagery was the important part, and judging from the results the attempt appears to have been successful. Each passage was read twice, slowly and with emphasis, and the boys were allowed as much time as they required to answer the questions. It was found that the six passages were finished in each case in about half an hour.

With each class the extracts read were of three types. Extracts 1 and 4 were of Type A—that is of the type used for the last experiment, the ideas being contained in the images. In Type B (Extracts 2 and 5) the imagery is not essential, serving to enrich and develop the leading thoughts, while in Type C (Extracts 3 and 6) the portions of the poems selected were thought to contain no imagery at all. Type C is not an essential part of the experiments. It was brought in for purposes of comparison and as a matter of interest. The important thing is to notice how the imagery of each boy functions with respect to the literature of Types A and B respectively.

The extracts chosen for Class β were harder than those taken in Class α—or rather the underlying thoughts in them were more difficult. As far as possible Extracts 1, 2, and 3 with each class were chosen so as to be of equal difficulty; similarly with Extracts 4, 5, and 6. Before the lines were read to the class they were submitted to unbiassed adult critics, who found them to be of approximately equal difficulty.

The Extracts read to Class α were as follows:—

I.

"Time is like a fashionable host
That slightly shakes his parting guest by the hand,
And with his arms outstretch'd, as he would fly,
Grasps in the comer."

(Shakespeare: *Troilus and Cressida.*)

II.

(The boys were first told that this was written, by a poet, of his dead friend.)

"He is secure, and now can never mourn
A heart grown cold, a head grown grey in vain;
Nor, when the spirit's self has ceased to burn
With sparkless ashes load an unlamented urn."

(Shelley: *Adonais.*)

III.

"That we would do,
We should do when we would; for this 'would' changes,
And hath abatements and delays as many
As there are tongues, are hands, are accidents."

(Shakespeare: *Hamlet.*)

IV.

"Life, like a dome of many-coloured glass,
Stains the white radiance of Eternity,
Until Death tramples it to fragments."

(Shelley: *Adonais.*)

V.

(The boys were first told that this was said by Wolsey to Henry VIII.)

"Though perils did
Abound, as thick as thoughts could make 'em and
Appear in forms more horrid—yet my duty
As doth a rock against the chiding flood,
Should the approach of this wild river break
And stand unshaken yours."

(Shakespeare: *Henry VIII.*)

VI.

"Virtue, how frail it is!
Friendship, how rare,
Love, how it sells poor bliss,
For proud despair!
But we, though soon they fall,
Survive their joy and all
Which ours we call."

(Shelley: *On Mutability.*)

In marking the papers, one mark was given to a boy who seemed completely to have grasped the meaning of the passage, and half a mark to any boy who had either put down a portion of the meaning or who seemed to have carried the mental process involved in interpretation part of the way, though not far enough to arrive at the full and correct interpretation. The images were classed as: Full, Medium, and None. Had it been possible from the answers to classify the "Medium" images into "Medium" and "Weak," better results would probably have been obtained with each class.

The results of the experiment in this class are tabulated as follows:

EXPERIMENT II.—CLASS *a*.

No. of Boy.	Age.	Marks for A type (1 and 4).	Imagery in each case.	Marks for B type (2 and 5).	Imagery in each case.	Marks for C type (3 and 6).	Imagery in each case.
1	12·6	1 — 0 4 — ½	1 Full. 4 Full.	2 — ½ 5 — 0	2 Medium. 5 Full.	3 — 1 6 — 0	3 None. 6 None.
2	12·6	1—not tried 4 — 0	1 None. 4 Medium.	2 — 0 5 — 1	2 Medium. 5 Medium.	3—not tried 6—not tried	3 None. 6 None.
3	12·6	1 — 1 4 — 1	1 Full. 4 Full.	2 — ½ 5 — 0	2 Full. 5 Medium.	3 — 1 6 — ½	3 None. 6 None.
4	12·6	1 — 1 4 — ½	1 Full. 4 Full.	2 — 0 5 — 1	2 Medium. 5 None.	3 — 0 6 — 1	3 None. 6 None.
5	12·7	1 — 0 4 — ½	1 Medium. 4 Full.	2 — ½ 5 — 1	2 Medium. 5 None.	3 — 1 6 — 0	3 None. 6 None.
6	12·8	1 — 0 4 — 0	1 None. 4 None.	2 — ½ 5 — ½	2 Medium. 5 None.	3 — 1 6 — ½	3 None. 6 None.
7	12·10	1 — 0 4 — 0	1 None, 4 None.	2 — 0 5 — 0	2 Medium. 5 Medium.	3 — 1 6 — 0	3 None. 6 None.
8	13·0	1 — ½ 4 — ½	1 Full. 4 Full.	2 — ½ 5 — ½	2 Full. 5 Medium.	3 — 0 6 — 0	3 None. 6 None.
9	13·0	1 — ½ 4 — 1	1 Medium. 4 Full.	2 — ½ 5 — 0	2 None. 5 Medium.	3 — 1 6—not tried	3 None. 6 None.
10	13·2	1 — 0 4 — 0	1 Medium. 4 Medium.	2 — ½ 5—not tried	2 Medium. 5 None.	3 — 1 6 — ½	3 Medium 6 None.
11	13·2	1—not tried 4 — ½	1 Medium. 4 None.	2—not tried 5—not tried	2 None. 5 None.	3 — 0 6 — ½	3 None. 6 None.
12	13·3	1 — 1 4 — 1	1 Full. 4 Full.	2 — 0 5 — 1	2 Full. 5 None.	3 — 1 6 — ½	3 None. 6 None.
13	13·6	1 — 0 4 — ½	1 None. 4 None.	2 — ½ 5 — 0	2 Medium. 5 Full.	3 — 1 6 — ½	3 None. 6 None.
14	13·7	1 — 0 4 — 1	1 Full. 4 None.	2 — ½ 5 — 0	2 None. 5 Medium.	3 — 1 6—not tried	3 None. 6 None.
15	14·0	1—not tried 4 — 1	1 None. 4 Full.	2 — 0 5 — ½	2 Medium. 5 Full.	3 — 1 6 — 1	3 None. 6 None.

SUMMARY OF RESULTS (Maximum of marks always 30).

TYPE A.—Total number of points scored, 12.
The 14 marked "Full" scored 9½ points in all.
The 6 marked "Medium" scored ½ point in all.
The 10 marked "None" scored 2 points in all.

TYPE B.—Total number of points scored, 10.
The 6 marked "Full" scored 1½ points.
The 15 marked "Medium" scored 4 points.
The 9 marked "None" scored 4½ points.

TYPE C.—Total number of points scored, 16.
No boys were marked "Full."
The 1 boy marked "Medium" scored 1 point.
The 29 boys marked "None" scored 15 points.

The following conclusions may now be drawn:—

1. In Type A, where the meaning was contained in the imagery, the boys with full strong imagery have clearly been most successful. This we should have expected from the last experiment, though the results here are, to say the least of it, striking. That in 14 cases boys with strong visual imagery should score 9½ points as against the 2½ points scored in the remaining 16 cases by boys with medium and weak imagery or with none at all, is strong evidence for the presumption that imagery may aid the understanding of literature.

2. But in Type B which, as has been seen, represents a more usual kind of literature, the results go as markedly in the other direction. The images are not essential to the understanding of the matter, and the boys who receive the strongest images are actually balked by these images, and fail to grasp the underlying thought. Thus in 6 cases boys with strong imagery score but 1½ points, while in 9 cases boys who receive no images score three times the number.

3. In Type C it will be seen that a slightly higher percentage of correct replies was received. This is no reason, however, for the assumption that boys can understand literature without images better than literature which does arouse images in their minds, for in the next class we shall see that an opposite result was recorded. This question will therefore be left alone.

. . . . .

The Extracts read to Class β were as follows :—

I.

" Beamy the world, yet a blank all the same,
Frame-work which waits for a picture to frame;
What of the leafage, what of the flower?
Roses embowering with nought they embower."

(Browning : *Wanting is—What?*)

II.

" The after-silence, when the feast is o'er,
And void the places where the minstrels stood,
Differs in nought from what hath been before,
And is nor ill nor good."

(Watson : *The Great Misgiving.*)

III.

" They that have power to hurt and will do none,
That do not do the thing they most do show,
Who, moving others, are themselves as stone,
Unmovéd, cold, and to temptation slow—
They rightly do inherit heaven's graces."

(Shakespeare : *Sonnets.*)

IV.

" When the lamp is shatter'd
The light in the dust lies dead—
When the cloud is scatter'd,
The rainbow's glory is shed.
When the lute is broken
Sweet tones are remembered not;
When the lips have spoken,
Loved accents are soon forgot."

(Shelley : *The Flight of Love.*)

V.

" How sweet and lovely dost thou make the shame
Which like the canker in the fragrant rose
Doth spot the beauty of thy budding name."

(Shakespeare : *Sonnets.*)

VI.

" Of all the artists, living, loving,
None but would forego his proper dowry,
Put to proof art alien to the artists'
Once and only once and for one only."

(Browning : *One Word More.*)

The results appear as follows :—

EXPERIMENT II—CLASS β.

No. of Boy.	Age.	Marks for A type (1 and 4).	Imagery in each case.	Marks for B type (2 and 5).	Imagery in each case.	Marks for C type (3 and 6).	Imagery in each case.
1	14·5	1—not tried 4 — 1	1 Full. 4 Medium.	2 — ½ 5 — 0	2 Medium. 5 Full.	3 — ½ 6—not tried	3 None. 6 Medium.
2	14·10	1 — 0 4 — 1	1 Full. 4 Very full.	2 — 0 5—not tried	2 Full. 5 Full.	3 — 0 6—not tried	3 Full. 6 None.
3	15·6	1—not tried 4 — 1	1 Full. 4 Full.	2 — 0 5 — ½	2 Medium. 5 Full.	3 — ½ 6—not tried	3 None. 6 None.
4	15·9	1 — 0 4 — 1	1 Full. 4 Full.	2 — ½ 5 — ½	2 Full. 5 Full.	3 — ½ 6 — 0	3 Medium. 6 None.
5	16·2	1 — 0 4 — 1	1 Medium. 4 Medium.	2 — 1 5 — ½	2 None. 5 Full.	3 — 0 6 — ½	3 None. 6 None.
6	16·5	1 — 0 4 — 0	1 None. 4 Medium.	2—not tried 5 — 0	2 Medium. 5 Full.	3—not tried 6 — ½	3 Medium. 6 None.
7	16·5	1—not tried 4 — 1	1 Full. 4 Full.	2—not tried 5 — 0	2 Full. 5 Full.	3 — 1 6 — 1	3 None. 6 Medium.
8	16·6	1 — ½ 4 — ½	1 Medium. 4 None.	2—not tried 5 — ½	2 Medium. 5 Medium.	3 — 0 6 — ½	3 None. 6 None.
9	16·7	1 — 0 4 — 1	1 Medium. 4 Medium.	2 — 0 5 — 0	2 Medium. 5 Full.	3 — 0 6 — 0	3 None. 6 None.
10	16·8	1 — ½ 4 — ½	1 Medium. 4 Full.	2 — ½ 5 — 0	2 Medium. 5 Full.	3—not tried 6 — 0	3 Medium. 6 Medium.
11	16·8	1 — 0 4 — 1	1 Full. 4 Full.	2 — ½ 5 — 1	2 Full. 5 Full.	3 — 1 6 — 1	3 Medium. 6 None.
12	17·2	1 — 1 4 — 1	1 Medium. 4 Full.	2 — 0 5 — 0	2 Full. 5 Full.	3 — ½ 6—not tried	3 None. 6 None.

SUMMARY OF RESULTS (Maximum of Marks always 24).

TYPE A.—Total number of points scored, 12.
The 11 marked "Full" scored 6½ points in all.
The 11 marked "Medium" scored 5 points in all.
The 2 marked "None" scored ½ point in all.

TYPE B.—Total number of points scored, 6.
The 16 marked "Full" scored 3½ points in all.
The 7 marked "Medium" scored 1½ points in all.
The 1 marked "None" scored 1 point in all.

TYPE C.—Total number of points scored, 7½.
The 1 marked "Full" scored no points.
The 7 marked "Medium" scored 2½ points.
The 16 marked "None" scored 5 points.

These results are not so striking as those in Class α, and before proceeding to examine them further we should notice a very important point. It is that several of the boys with the strongest imagery found by introspection that in order to interpret the passages of Types A and B they were obliged to cast aside the imagery and to reason out the sense of the extract. Sometimes they found that the images were too strong for them—subjects 4 and 11 especially found this to be so—and they were then unable to interpret. This inability to reject the images was naturally greatest where the imagery was strongest—i.e., in the Type A extracts—a fact which perhaps explains why the boys with strongest imagery did not score more marks.

This piece of introspection must be taken into consideration when we make up our minds as to the value of imagery in the classroom ; the possibility of strong imagery retarding intellectual processes, even with literature of Type A, will make us less willing to admit its value.

The following conclusions may now be drawn :—

1. TYPE A.—In spite of the check just recorded, the fact that in eleven cases of strong imagery more marks were gained than in thirteen cases of medium and weak imagery supports the conclusions arrived at in the similar section of Class α. But this check, together with the large number of " Medium " cases, makes it quite impossible for any further conclusions to be drawn.

2. TYPE B.—Here the relative uselessness of strong imagery is well marked. Sixteen cases of strong imagery yield 3½ marks, while the only boy who has not a single image interprets the passage quite correctly—he is the only boy in the whole class who does so, and in order of merit on the whole of the results he is nearer the bottom of the list than the top. The average number of marks scored in Type A by the " Full " class is ·6 ; in Type B it is only ·2.

FINAL CONCLUSIONS.—The final conclusions to which this series of experiments has led us seem to be somewhat as follow :—

1. In literature where the meaning is contained in the imagery, or where the imagery plays a large part in the thought of the matter in hand, strong imagery is often of great value and may be used in the interpretation of the matter. Sometimes, however, it may actually hinder the understanding of the literature and its rejection by the pupil may be absolutely necessary if he is to grasp the meaning.

2. In literature of Type B, where the imagery is not essential, but merely enriches or develops the thought, strong imagery is often a positive hindrance to interpretation. In dealing with such literature the teacher would therefore not exert himself to develop the imagery of the piece—as was done in an experiment of the former series—by explanation or emphasis, until after the interpretation had been completed by his pupils.

3. There is no reason to suppose that, other things being equal, a piece of literature containing many pictures is necessarily easier or harder for a boy to grasp than a piece entirely devoid of pictures. With boys resembling those of Class β who could not interpret by images, such literature would generally be harder, but conversely with boys whose powers of imagery are greater than their intelligence, it would probably be found more easy. On this point, then, it is best that nothing should be laid down.

THE LITERARY BIAS IN PRIMARY SCHOOL EDUCATION.

By C. M. MEREDITH.

THE tradition in favour of classical training has in the past been a serious obstacle to progress in Secondary Schools; there seems now to be a danger that the reverence for a "literary" training in English will prove a similar obstacle in the Primary Schools. The school life of the Primary school child is short, hence it is the more important to apply a severe test to what we propose to teach him, and to select our material not only on the ground that it is good, but on the ground that it is better than other material ready to our hand. Now a literary training aims at securing for the child the following advantages:—

(*a*) A means of self-expression in speech and writing;
(*b*) An ability to gain information from books;
(*c*) An appreciation of good literature.

The first two aims are obviously best attained along the lines of the child's own interests, and Professor Green, in his article on the Teaching of English in the December number of this Journal, has considered the best means of satisfying the school-child's demands for a practical means of self-expression in language and for training in the use of books.

But the bulk of poetry and literature lessons aim at something different—they are meant to encourage literary appreciation and what may be called self-expression in other people's words, and in particular the emphasis is laid on poetry. Teachers necessarily obtain their own training largely through the medium of books, and the worship of "literature" surrounds them in their schools and training colleges. Hence literature, and especially poetry, is idolized; it "elevates," it "refines," " it "supplies us with ideals," it "offers food for the imagination." Not to enjoy poetry is the unforgivable sin; a mathematician or an engine-driver may confess to it, but the teacher who does so must expect to be met with that pained surprise which is more crushing than abuse. This attitude is comparatively harmless in the Secondary School, where it is corrected, at any rate from the child's point of view, by the wider curriculum and lengthened opportunities for the acquirement of interest. It is dangerous in the Primary School because of the child's environment and outlook. He comes to school, at any rate in the poorer districts where the problem of education is most difficult, from a home where books are infrequent. He is often inarticulate, has a small vocabulary, and acquires fluency of speech late or not at all. Hence in literary subjects his handicap is enormous. Yet, instead of looking for other means of awakening his intelligence and educating him, we insist on poetry and story as the primary, and sometimes the final, method. What is the saner view? Other means of "refinement" and of self-expression are available. Music, especially singing, painting and drawing, and dancing. In all these cases the appeal seems to be to more primitive pleasures, which are possibly more suited to the child. In all, the technique required before the performer can obtain pleasure is infinitely less. Nevertheless, in very few schools in poor districts is emphasis laid on any of these subjects. Painting is merely conventional, free expression work being confined to the younger children. Dancing may be left out altogether. Music is taught, but only in exceptional cases is there much realization of its possibilities from an educational point of view. It is true that an enjoyment of good literature is of immense value, and if the child did learn to take permanent pleasure in literature the time spent on it in school would be more than justified. But, after all, how many children who leave school at 14 do read much poetry or prose "for pleasure" afterwards? Some do, and of the others many may have enjoyed their school lessons, although the interest acquired was insufficient to surmount later obstacles and induce them to read for themselves. This enjoyment is very much to the good, and all would be well if the time spent in literature lessons did not mean time taken from something else. The good done could be obtained to a large extent from incidental treatment in connexion with other subjects. Meanwhile, as things are, the schools neglect the possibilities of music and the other subjects mentioned above; they also neglect those of science as it comes to the child through his everyday life. Teachers labour at "Nature Study," importing "specimens" into our town schools with devoted zeal and presenting them to children whose experience of nature is confined to the Parks and to rare holidays. We ignore, as Mr. H. G. Wells long ago pointed out, the romance of the electric trams and of machinery. By all means let children learn to enjoy the Parks more fully; let them learn to love the animals they see around them; let them grow plants and keep pets; but let them also learn to get some intelligent pleasure from their other surroundings—to know some of the principles on which streets are lighted, houses built, and trams worked—to understand some of the possibilities of motor transport, and to be critical of street paving.

The interests of the human race are not only almost innumerable now, they are increasing rapidly year by year. It is the business of the school to make such a representative selection from these interests as may give each child a chance of getting a start in some subject that appeals to him, or, at least, of laying the foundation of interests which later experience may lay hold on and develop. Literature deserves its place as one of these interests for which preparation is to be made, but it does not deserve the two or three places which are in practice sometimes claimed for it. Still less need it be crowned with a halo and labelled "Culture." Teachers need to adjust their views to the perspective of modern life. If the adjective "cultured" can only be applied to the man of literary training, then let them recognize that the world contains but few "cultured" persons, and that to aim at their production in Primary Schools is to court failure. Science, or rather the application of science to practical life, forms nowadays, for most of us, the readiest appeal to our intelligence. It is in closer connexion with our everyday life, and this is of importance when work leaves little time for the cultivation of more remote interests and little strength for the overcoming of obstacles to the pursuit of any interest. Yet we sacrifice the possibilities of such an appeal in schools, for the sake of a tradition of culture handed down to us from earlier times and quite different conditions.

THE COLOURING OF SCHOOL MAPS.

By E. J. G. BRADFORD, B.Sc.

THE maps in use in elementary education some fifteen to twenty years ago were of two kinds, viz., those showing political features and those showing physical features. The former type of map was much the same as that which is to be found in the cheaper atlases of to-day. The one aim of the designer seemed to be, so to arrange his colours in order and saturation as to avoid any obvious "clash." One of the masterpieces of this kind is the arrangement of the eighty-seven "departments" in the map of France. The second type of map was either not coloured at all or else the outline was filled in with one uniform colour. On these maps the rivers were marked with thick blue or black lines, and the mountains with either lines which were much thicker and punctuated at intervals with "eyes" representing peaks, or else they were indicated by marks approximating in appearance to black or brown caterpillars.

The political map has undergone very little change in colouration or in the manner of presenting its information. On the other hand, the physical map has undergone several changes both in colouration and in the manner of presentation. The way in which the physical features on these old-fashioned maps were marked was certainly distinctive, and usually no complaint could be raised on the score of overcrowding.

The earlier manner of representing relief was symbolic; it can hardly be pretended that a black strip punctuated with "eyes" has any resemblance to a mountain range. On the other hand, in many of these maps the sea was coloured blue. It is here that the system of colouration based on association was started. The sea is blue (?) therefore it will assist the reader's imagination if the seas on the map are coloured blue. This seems to have been the reason, implicit or explicit, for colouring maps in this way. In later products this principle of colouration by association was developed further, the lowlands were coloured green and the highlands brown, no doubt owing to the fact that in England at least (and these remarks refer primarily to maps produced in England) the plains are usually green with vegetation, while the moors and highlands tend to have a brownish tint. This system of colouring tended to suggest vegetation as well as relief: quite a harmless effect in itself, when the geographical course extended no further than the limits of the British Isles, as it often did in those days. Colouring according to association has been criticised because in countries outside Western Europe it is often incorrect to imagine that land under 1,500 feet is green with vegetation, e.g., the Sahara and the prairies of Western Canada.

Some of the modern wall maps use only two colours, grades of blue for the sea and grades of brown for the land. Is the difficulty of possible associations overcome by this method ? One of the latest wall maps of Africa has the mainland coloured in brown only ; for dull monotony this map would be hard to beat. It also suffers from the disadvantage of giving one the impression that the continent is one arid tableland. Fancy a map giving the impression that the land bordering on the Congo basin was a dry and arid waste ! It may be objected that the writer has been trained to use the old-fashioned methods of colouration, and that his imagination has become tainted with these associations. The cause of these associations lies much deeper than that.

Mr. Bullough has shown, in his articles on the appreciation of colour,[1] that whilst some people associate every colour with an object, the majority of people tend to associate only some colours with objects. In the case of maps this tendency is fostered in the child's mind by the ambiguity of the word country. This tendency to association militates against using colour as a pure symbol, though that is apparently what the modern cartographer is trying to do. Another fact worthy of consideration is that for some people a colour always suggests bodily feelings or sensations ; a red suggests warmth, pale green coolness, orange suggests warmth, but less so than red, &c. This fact could easily be made use of, and has been to a limited extent, in colouring maps which depict the average temperatures in different regions. Maps could be constructed in which red areas represented those of maximum heat, orange and yellow intermediate degrees, with green marking those of minimum temperatue. The scheme could be arranged with regard to the saturation of colours, in such a way as to convey the impression of "moreness" as well as that of heat or absence of heat. A saturated colour naturally suggests more than when placed alongside a less saturated colour. [The impression of "moreness" is closely allied to that of apparent "weight," a characteristic of colours which has been investigated by Mr. Bullough.[2]] The most satisfactory maps published up to the present are, in the writer's opinion, those which represent the amount of rainfall by using blues of different degrees of saturation. They certainly give the impression of "moreness," and at the same time the colour gives some suggestion of water ; a blue green might possibly be more satisfactory in this respect.

Some of the earlier maps consisted of a coloured mainland in a colourless sea ; the mainland was coloured, in all probability, in order to make it "stand out." This property of making things "stand out" is, in varying degrees, possessed by all colours whether they find a place in the spectrum or not. Physiologists and physicists[1] had many years ago noticed that some colours tend to make the object bearing them appear further off than do other colours. This would seem to depend on the purely physical fact that the rays of red light, for example, in passing through a lens, such as that of the eye, are not deflected from their original path to the same extent as are the blue rays, and hence they necessitate different focussing, just as do near and distant objects. All persons, however, are not affected to the same extent, as will be seen from the experiments described below.

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[1] *British Journal of Psychology*. Vol. III.

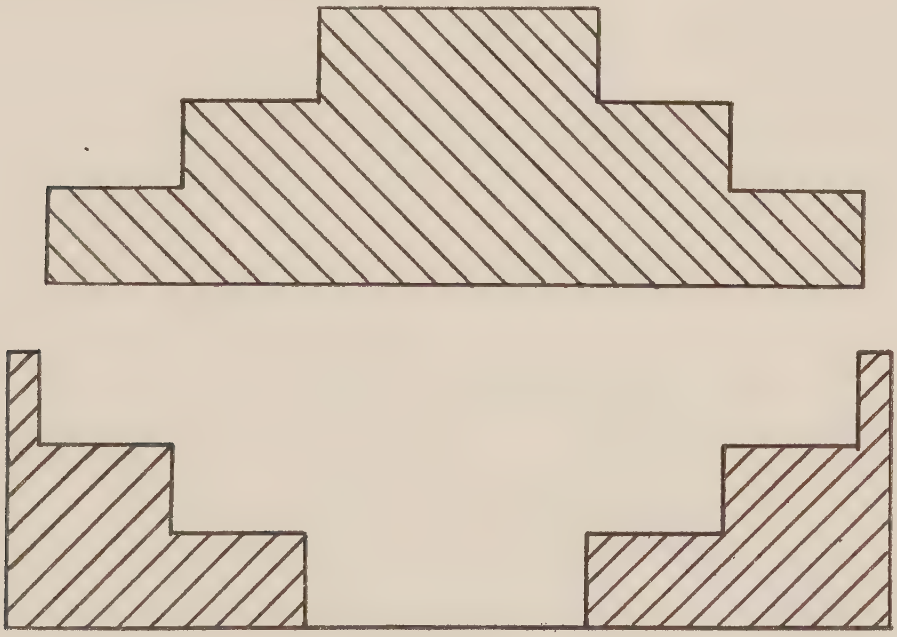
[2] "The apparent heaviness of colours."—*British Journal oj Psychology*. Vol. I.

These experiments were made for the purpose of discovering (1) if children were susceptible to this illusion of distance or relief ; (2) whether marked individual differences, if any, were at all common ; (3) which colours and which combinations of colour were most efficient in producing this illusion :—

[That colours do affect one's apprehension of distance can be tested very easily by drawing three concentric circles and then fixing one's attention on the innermost one. This central circle can then, at will, be made to appear either nearer or more distant than the others. Colour these circles differently and it will be found that one's mode of apprehension is biassed in a particular direction.]

The subjects. These consisted of about twenty boys from an elementary school situated in a rather poor quarter of London. Only twelve of these completed all the tests ; the results of the remainder had to be omitted because of their occasional absence. These results as far as they went, however, confirmed those obtained from other subjects.

The material. Two clay models were used ; one was formed by three clay cylinders of different diameters, but of equal height, arranged one above the other ; the second was formed of a solid cylindrical block of clay out of which three cylinders of different diameters, but of the same height, had been cut.



The two models in section.
They were named Hollow (H.) and Solid (S.)

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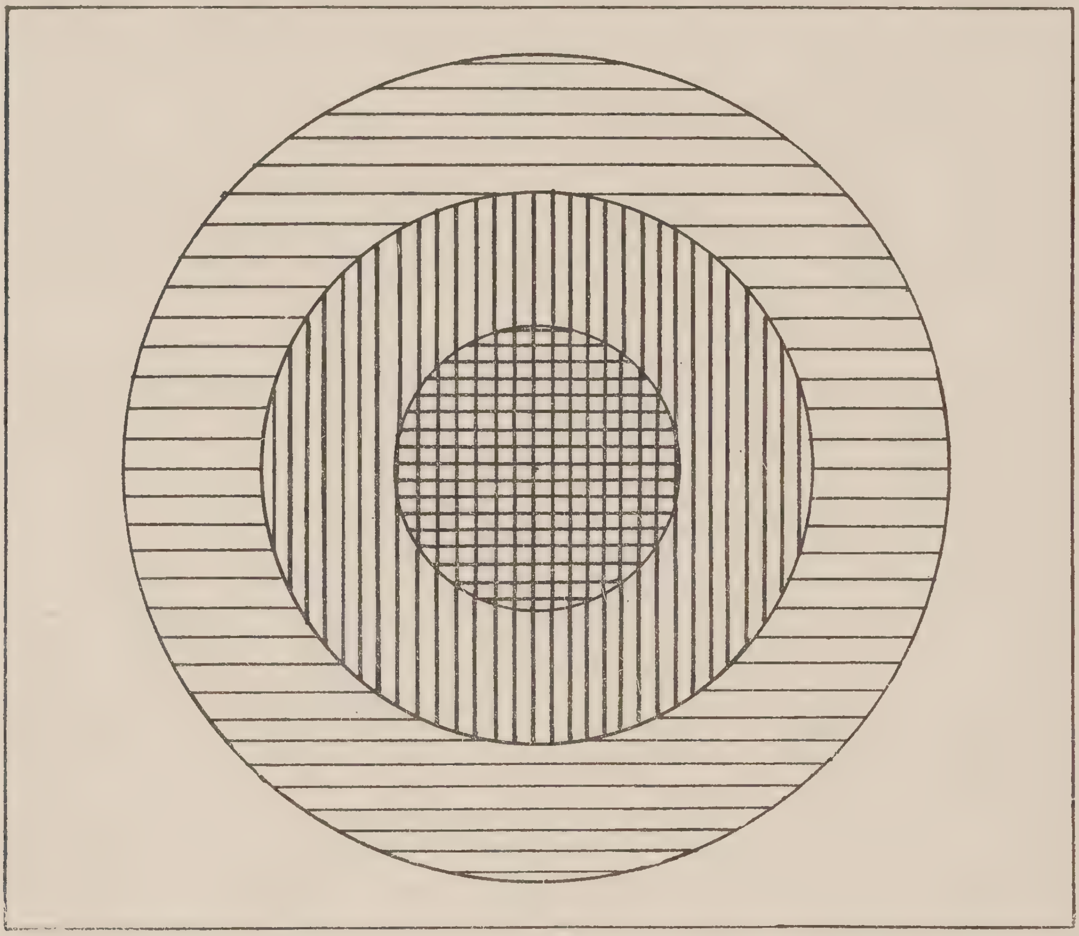
[1] K. Peuker. "Hohenschichtenkarten." Witwer. Stuttgart, 1910. L. Hermann. "Human Physiology." English Edition, 1878. Therein references are made to the work of Frauenhofer on this subject.

Besides the models there were a number of "pictures," consisting of three concentric rings of colour pasted on squares of white cardboard, these rings being $\frac{3}{4}$ in., $1\frac{1}{2}$ in., and $2\frac{1}{4}$ in. radius (of the outer circumference). A black background could not be used as the "picture" then appeared to be set back behind the ground.



The first six pictures were made up of two grades of yellow and three grades of red paper. In order to get their luminosity value these colours were matched with a set of Hering's grey papers. Y_1 and Y_2 represent the two grades of yellow; R_1 R_2 R_3 represent the three grades of red paper. The numbers refer to the numbers on the grey papers, 50 being the grey almost indistinguishable from black, and 1 being that nearest the white end of the series.

$Y_1 = 3$ $\quad$ $R_1 = 14$
$Y_2 = 8$ $\quad$ $R_2 = 18$
$R_3 = 36$

The pictures were made up of the following colours, reading from the outside to the inside ring.

Y_1 Y_2 R_1 (1) $\quad$ R_1 Y_2 Y_1 (4)
Y_1 Y_2 R_2 (2) $\quad$ R_2 R_1 Y_2 (5)
Y_2 R_1 R_2 (3) $\quad$ R_3 R_2 R_1 (6)

The second set of six pictures were formed from the following colours—green (G), brown (Br), and blue (B), having the following luminosities:—

$G_1 = 2$ $\quad$ $Br_1 = 8$
$G_2 = 3$ $\quad$ $Br_2 = 16$ $\quad$ $B_2 = 32$
$G_3 = 4$ $\quad$ $Br_3 = 23$ $\quad$ $BG = 16$ (Blue Green)
$G_4 = 14$ $\quad$ $G_a = 8$ $\quad$ $Br_a = 5$

The pictures were formed as follows :—

G_2 Br_1 Br_2 (1) G_1 G_3 G_4 (4)
Br_1 Br_2 Br_3 (2) G_4 G_3 G_2 (5)
G_a BG B_2 (3) Br_3 Br_2 Br_a (6)

The third set of eight pictures introduced the new colours violet and mauve, and the following grades :—

$V_1 = 10$ $B_3 = 38$
$M_1 = 8$
$M_2 = 18$

The pictures were composed as follows :—

G_4 Br_1 Br_2 Br_2 Br_1 G_4
G_2 Y_1 Br_1 Y_2 R_1 R_3
G_3 G_4 Br_1 B_3 B_1 G_a
BG B_2 B_3 V_1 M_1 M_2

Method of Procedure. The subjects were seated at a distance of about five paces from the experimenter. Before the first sitting the subjects were shown the models, and it was explained to them that some pictures would follow which were meant to represent one of these models, and that they had to write down which model each picture represented. The subjects were told to write down either (H) Hollow or (S) Solid according to the model which the picture suggested. One sitting was taken every week, and two judgments of each picture were made at each sitting at an interval of about ten minutes.

The following tables give the number of "Solid" or S judgments for each picture :—

CLASS III.

Subject.	$Y_1 R_1 R_2$	$Y_2 R_1 R_2$	$Y_1 Y_2 R_1$	$R_2 R_1 Y_2$	$R_3 R_2 R_1$	$R_1 Y_2 Y_1$	Total.
I.	10	10	10	0	1	0	31
II.	10	10	9	0	0	1	30
III.	4	2	2	5	8	7	28
IV.	9	8	9	2	0	0	28
V.	5	8	7	6	5	5	36
VI.	10	10	3	1	2	1	27
Total.	48	48	40	14	16	14	

CLASS IV.

Subject.	$Y_1 R_1 R_2$	$Y_2 R_1 R_2$	$Y_1 Y_2 R_1$	$R_2 R_1 Y_2$	$R_3 R_2 R_1$	$R_1 Y_2 Y_1$	Total.
VII.	8	8	5	5	6	1	33
VIII.	9	5	7	2	6	4	33
IX.	7	9	6	2	5	2	31
X.	7	10	9	2	0	0	28
XI.	10	10	8	0	1	0	29
XII.	9	9	5	0	4	5	32
Total.	50	51	40	11	22	12	

From the totals in the different columns it will be seen that there is a decided tendency to judge the picture with the gradual decrease of luminosity towards the centre (e.g., Y_1 R_1 R_2) as representing the solid model; while those pictures whose luminosity increases towards the centre (e.g., R_2 R_1 Y_2) are generally judged to represent the hollow model. In other words, the less luminious the colour the nearer it appears to be.

Of the twelve subjects tested, only one (III) shows any tendency to reverse the general verdict. Also only one subject (V) shows any marked tendency to give more "solid" than "hollow" judgments (36 S. and 24 H.) whereas from the above rule we might expect 30 S. and 30 H. judgments.

The picture Y_1 Y_2 R_1 seems less decidedly solid in appearance than does Y_1 R_1 R_2. This may be partly accounted for by the fact that there is a smaller difference in luminosity between Y_1 and R_1 than there is between Y_1 and R_2. On the other hand, the difference in luminosity between Y_2 and R_2 is no greater than that between Y_1 and R_1, and yet it evokes considerably more S. judgments. It seems that the more luminous picture Y_1 Y_2 R_1 is wanting in total mass effect when compared with the other two, and that the halo due to brightness contrast is less effective on the more luminous ground.

The second group of pictures was composed of colours of different hues, which were not always arranged in spectral order. This series was used concurrently with the first, so that it would be affected in the same way by practice. This set of pictures was always preceded by the first series at each sitting. The results of the S. judgments are tabulated below :—

CLASS III.

Subject.	G_2 Br_1 Br_2	$Br_1 Br_2 Br_3$	Ga BG B_2	G_1 G_3 G_4	G_4 G_3 G_2	$Br_3 Br_2 Br_a$	Total.
I.	9	9	10	7	3	1	39
II.	10	10	10	10	0	0	40
III.	3	3	4	6	7	7	30
IV.	4	7	6	10	2	0	29
V.	8	6	9	9	2	2	36
VI.	8	3	7	7	2	2	29
Total.	40	38	36	49	16	12	

CLASS IV.

Subject.	G_2 Br_1 Br_2	$Br_1 Br_2 Br_3$	G_a BG B_2	G_1 G_3 G_4	G_4 G_3 G_2	$Br_3 Br_2$ Br	Total.
VII.	7	5	8	9	1	6	36
VIII.	7	5	6	8	3	8	37
IX.	8	10	8	7	2	3	38
X.	8	10	9	8	0	1	36
XI.	10	10	10	10	0	0	40
XII.	7	7	8	8	4	3	37
Total.	47	47	49	50	10	21	

The results from Class III (the older boys) are less decisive than those from Class IV, and three subjects in the former Class gave 30 or less S. judgments when, according to the rule, 40 might have been expected. Subject III again gives judgments which are contrary to those obtained from the rest of the Class.

Neglecting the results of Subject III we get the combined totals of S. judgments from both Classes as follows. (Assuming the rule to be true the total S. judgments possible would have been 110 for some pictures and a probable zero for others.) :—

Y_1 R_1 R_2 94 out of possible 110 = 85·5% ←
Y_2 R_1 R_2 97 „ „ 110 = 88·2% ←
Y_1 Y_2 R_1 78 „ „ 110 = 70·9%
R_2 R_1 Y_2 18 instead of probable 0 = 16·4% ←
R_3 R_2 R_1 30 „ „ 0 = 27·3%
R_1 Y_2 Y_1 19 „ „ 0 = 17·3% ←

G_2 Br_1 Br_2 84 out of possible 110 = 76·4%
$Br_1$$Br_2$$Br_3$ 82 „ „ 110 = 74·5%
G_a BG B_2 81 „ „ 110 = 73·6%
G_1 G_3 G_4 93 „ „ 110 = 84·5% ←
G_4 G_3 G_2 19 instead of probable 0 = 17·3% ←
Br_3 Br_2 Br_a 26 „ „ 0 = 23·6%

The pictures marked ← give over 80% judgments in favour of the assumed rule. Those pictures in which the spectral order is reversed (against the luminosity) give results which are not quite so decisive even though the gradations of luminosity are the same, e.g., G_a BG B_2. The table also shows that the non-spectral colour, brown, does not give such good results as do the spectral colours.

A further set of eight pictures was introduced a week later than the other two sets; the results from them confirm those of the previous sets. The totals are given below :—

G_4 Br_1 Br_2 33 out of probable 44 = 75·0%
G_2 Y_1 Br_1 22 „ „ 44 = 50·0%
G_3 G_4 Br_1 34 „ „ 44 = 77·3%
BG $B_{\overline{2}}$ B_3 37 „ „ 44 = 84·1% ←
$Y_{\overline{2}}$ R_1 R_3 42 „ „ 44 = 95·5% ←
$Br_{\overline{2}}$ Br_1 G_4 16 instead of probable 0 = 35·5%
B_3 B_1 G_a 9 „ „ 0 = 20·5%
V_1 M_1 $M_{\overline{2}}$ 32 out of possible 44 = 72·7%

The introduction of brown with green in each case brings the percentage below the 80. Hence it may be said that the introduction of non-spectral colours is detrimental to the illusion of relief.

The effect of the background was tested by the method of comparing pairs of pictures. Three pictures which appeared solid were taken in pairs: the subjects were asked to pay attention to the central circle of colour and then to say which centre "stands out most" or "seems nearest" or "sticks out most from the cardboard." The subjects were told that, of course, the centres were really both equidistant, but that they had to write down which one they could most easily *imagine* to be the nearer. Thus in this experiment the subjects had to try and fit two objects into one apperceptive system, whereas in the previous experiments, they had to try to fit either of two apperceptive systems on to one object. This comparison test proved to be more difficult than did the previous tests. This difficulty shows itself in the fact that the results from Class IV (lower Class) were less decided than those from Class III.

The two pictures were exposed simultaneously side by side, and the subjects were required to write down whether the centre of the left (L) or that of the right (R) picture appeared the nearer. The results were as follows. For the sake of clearness the L. judgments are omitted from the table.

Position.	Picture.	Totals of Judgments, Class III.	Totals of Judgments, Class IV.	% Total possible Judgments, Combined Classes.
Right...	Y_1 R_1 R_2			
Left ...	Y_1 Y_2 R_1	24 R	18 R	70·0
Right...	Y_2 R_1 R_2			
Left ...	Y_1 Y_2 R_1	19 R	20 R	65·0
Right...	Y_2 R_1 R_2			
Left ...	Y_1 R_1 R_2	7 R	15 R	36·7
Right...	Y_1 Y_2 R_1			
Left ...	Y_2 R_1 R_2	4 R	9 R	21·7
Right...	Y_1 R_1 R_2			
Left ...	Y_2 R_1 R_2	26 R	16 R	70·0
Right...	Y_2 R_1 R_2			
Left ...	Y_1 R_1 R_2	8 R	7 R	25·0

Each of the twelve subjects was tested with all six pairs of pictures on five successive occasions at intervals of one week. Hence the total possible R. judgments in each case (for the combined classes) was 60.

An inspection of the results obtained from the first pair of pictures shows that the colour R_2 appears nearer than R_1 when placed on an exactly similar background. From the results of the third, fifth and sixth pairs we see that R_2 appears nearer when placed on the background composed of the colours Y_2 R_1 than when placed on the background Y_1 Y_2, i.e., it appears nearer when on the less luminous background. A probable explanation of this result is that the darker background itself appears nearer, and thus has a sort of "lifting" effect on the central mass, in other words, the centre is affected by the total mass effect. In each of the second and fourth pairs there is but one grade of colour between the innermost and outermost circles, nevertheless the colour on the darker background appears the nearer. It must be remembered, however, that the true background was the white cardboard. Thus a red surrounded by Y_2 appears to stand out further from the white cardboard than it would if its most proximate background were Y_1.

Conclusions and Suggestions.

1. The less white there is in any colour the nearer it will appear.

   Such being the case, relief effects could more easily be obtained by drawing maps on white paper than by using a blackboard if colours are introduced.
2. The differences in the grades of colour should be well marked in order to make use of any possible brightness contrast.
3. The colouring is most effective when the changes are in spectral order, e.g., using red for those areas which are to stand out most.
4. Sudden changes from one colour to another are not as effective as a graded series shading from one colour to another.
5. A combination of spectral and non-spectral colours, e.g., brown, is not as satisfactory as a completely spectral series.
6. Colours, some more than others, tend to become associated with certain objects and hence cannot be used as pure symbols.

   This necessitates either a careful selection of colours in order to make use of the associations, or else the making of differently coloured maps of the same region, in order to defeat any possible associations having an injurious effect. Of the two alternatives the former seems the more preferable.
7. A given coloured area will stand out more from a light background if it be surrounded by a less luminous colour than if it be surrounded by a more luminous colour of the same hue.

   Thus if two maps are to be used for the purpose of comparing the configuration of the countries, it would be better if the colour representing land over 1,000 ft. on the one were of the same hue and saturation as that which represented land over 1,000 ft. on the other.
8. The relief effect of maps is often spoilt by the fact that the sea is represented by a deep blue instead of a pale blue. The result of this is that the landmass, if it be insular, appears to be set in a hole in the sea; in other words, the sea stands out more than the land. It is a general practice, too, to colour the shallow seas a pale blue and the deep seas a dark blue, so that the deep seas stand out, as it were, from the shallow seas. This is probably a result of the attempt to use colours on account of their associations, rather than as mere symbols. It would certainly be more consistent with the method of representing the land surface if the deeper seas were marked a paler blue than the shallow ones, and, moreover, it would give the idea that the bottoms of these deeper seas were further off,

an idea which can only be inferred and not directly apprehended from the ordinary map.

9. As a general rule, since it is impossible to use colour as a pure symbol, the colour of a map should be such as to make use both of its intrinsic quality of producing an impression of relief, and also of any extrinsic quality it may have accumulated by association.

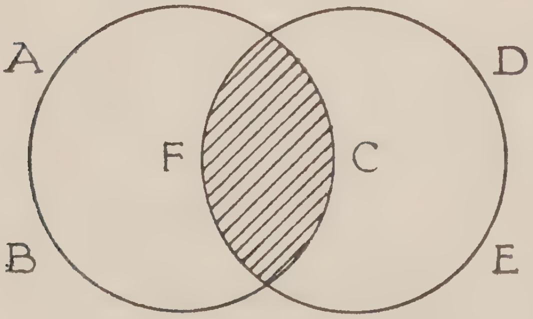
For the guidance of those readers who may wish to test the above principles, it may be said that the following colour scheme gives good results. Start from a greenish yellow for the lowest land, then proceed through orange-yellow to a light brownish crimson, and finally to a deep crimson brown. This scheme practically does away with the possibility of associations, and also with that abrupt transition from a fairly saturated green to that dead brown colour, which is so effective in destroying the relief effect of the maps of to-day.

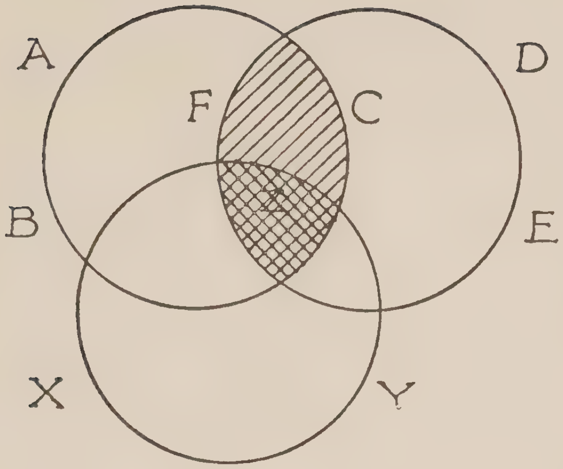
THE INTER-RELATION OF MEMORY PERFORMANCES.

By STANLEY WYATT, M.Sc.

1.—Objects of the Investigation.

THIS investigation was undertaken with the object of determining quantitatively the relation between different memory performances. Many conflicting statements regarding the connexion between such performances are still current. The situation would be less ambiguous if it were represented by accurate numerical results. Consequently an attempt has here been made to express the results with quantitative precision, and to interpret them with equal exactitude. As far as possible, the factors involved in memorizing different material have been quantitatively determined. This has been achieved by utilizing the method of partial correlation; a process which, by making certain factors constant, expresses more clearly the degree of similarity between others. Perhaps a little explanation is here necessary. Suppose the ability to memorize Concrete Terms is represented by the circle A B C, and the ability to memorize a Narrative by the circle D E F. In the present investigation the coefficient of correlation between these two abilities (the so-called "entire" coefficient) was found to be ·55; this is represented by the part common to the two circles. If, however, these abilities are also correlated with the ability to memorize Nonsense Syllables, the situation may then be represented by a third circle (X Y Z), which intersects





the other two. The part which is heavily shaded is now common to all three circles, and it is of considerable value to determine the extent of the correlation between the abilities represented by circles ABC and DEF, when that part common to them and also to a third ability is made constant. In the present case the value is found to be ·39; this is known as a "partial" coefficient. Thus, by means of this procedure, we are able to determine how far the correlation between different kinds of memory is due to the correlation of each with other memory performances, and how far it is independent of such correlation. Accordingly, evidence has been adduced which will indicate to what extent different memory exercises involve the functioning of similar mental processes. The results should enlighten us as to the possible existence of a general memory faculty, and reveal the extent to which ability in one kind of memory assures us of ability in another. If there are specific kinds of memory, it is useful, if not absolutely necessary, to determine the predominant form in each individual. Often professional success in life depends in part upon a serviceable memory in some particular direction. Thus a boy may have a remarkable memory for tunes or faces, and yet fail completely in his efforts to memorize numbers, titles, or positions; such a boy can scarcely be expected to make a successful librarian.

If we obtain a number of correlational coefficients between different memory performances from a large number of individuals, we shall then be able to state, with some degree of certainty, the probability of a person being able to memorize a certain form of memory material providing we know his retentive powers for other memory series.

2.—The Tests Employed.

After many preliminary trials the following four tests were selected as relevant to the aims of the ivestigation :—

1. Immediate Memory for Nonsense Syllables.
2. Immediate Memory for Concrete Terms.
3. Immediate Memory for a Narrative.
4. Immediate Memory for Digits.

With the exception of the third test, each test was repeated four times, at intervals of one week. In order to secure material of approximately equal memorizing difficulty for the four applications of each test, a list of 40 words (or digits), which seemed to satisfy this condition, was first selected. This was then divided into four groups of ten each by chance.

At each sitting the following tests[1] were given in the order named: Nonsense Syllables, Concrete Terms, and Digits. The Narrative Test was given a week after the completion of the above tests, and was followed a week later by another test of similar form and content.

3.—The Subjects Tested.

These consisted of a group of 38 children of both sexes attending the Fielden Demonstration School, Manchester. Their ages ranged from 10 to 12 years. They had frequently been subjected to mental tests, and consequently their attitude towards the tests of this investigation was characteristic of their manner on the occasion of the usual weekly test in arithmetic. Further, all the tests were applied by the writer, who, for the past year, had acted in the capacity of teacher to these children. Thus the performances were unaffected by the presence of strange experimenters or unusual conditions of work, and consequently the possibility of the results not being representative was greatly diminished.

4.—The Application of the Tests to the Subjects.

Papers, containing the material to be memorized, were given out face downwards, and at a given signal the children turned them over and began to learn the series. Thirty seconds later a signal to stop was given, the papers were again turned face downwards, and the children attempted to write down on separate papers what they had remembered. No indication had been given as to how the series were to be learnt, except that the children were advised to reproduce the series in the right order as far as possible. The method of procedure was somewhat different for the Narrative Test; although the children were provided with printed forms of the narrative, they read it aloud in unison once, the pace being set by the experimenter, and then attempted to reproduce it.

5.—System of Marking.

Although positive values were given for correct reproductions, it seemed necessary to take into account the errors of recall; consequently in such cases negative scores were given. After much careful consideration the following system of marking was adopted:—

Nonsense Syllables.—2 marks were awarded for each syllable correct; 1 mark was given for each syllable having two letters correct; 0 marks were given for each having one letter correct; 1 mark was deducted for each completely incorrect syllable, and $\frac{1}{2}$ mark was deducted for each error of transposition of the syllables.

Concrete Terms.—2 marks were given for each word reproduced correctly, and 1, 0, and -1 marks were given according to the extent of the deviation from the correct word, $-\frac{1}{2}$ mark was also given for each error of transposition of the word.

Narrative.—1 mark was given for each idea correctly expressed, and 1 mark was deducted for each incorrect expression of an idea.

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[1] For the actual tests used, see Appendix, p. 11.

Digits.—2 marks were given for each number correctly reproduced; 0 marks were given if the number contained an incorrect digit; -1 mark was given for each number entirely incorrect, and $-\frac{1}{2}$ mark was given for each error of transposition of the number.

6.—Mathematical Treatment of the Results.

The coefficients of correlation were calculated by means of the product-moment[1] formula:— $\mathbf{r} = \dfrac{S\,(xy)}{N\,\sigma_1\,\sigma_2}$ As each test (with the exception of the Narrative) was repeated four times, the means of the first and fourth series were correlated with the means of the second and third, and an indication of the reliability of the test thereby obtained.[2] For the evaluation of the coefficients of correlation between different tests, the results of the four applications of each test were amalgamated.

In order to express more definitely the connexion between the performances measured, the method of partial correlation was employed.[3] When three variables are employed, the formula is:—

$$\mathbf{r}_{12\cdot3} = \frac{\mathbf{r}_{12} - \mathbf{r}_{13}\,\mathbf{r}_{23}}{\sqrt{1-\mathbf{r}^2_{13}}\;\sqrt{1-\mathbf{r}^2_{23}}}$$

With four variables, the formula becomes:—

$$\mathbf{r}_{12\cdot34} = \frac{\mathbf{r}_{12\cdot3} - \mathbf{r}_{14\cdot3}\,\mathbf{r}_{24\cdot3}}{\sqrt{1-\mathbf{r}^2_{14\cdot3}}\;\sqrt{1-\mathbf{r}^2_{24\cdot3}}}$$

(The subscripts indicate the numbers assigned to the tests.)

7.—Results obtained.

The following table gives the Mean, Standard Deviation[1] (σ), and Reliability Coefficient for each of the tests.

	Test.	Mean.	σ	Rel. Coefft.
1	Nonsense Syllables ...	4·42	2·89	·91
2	Concrete Terms ...	10·78	5·34	·86
3	Narrative	35·10	12·10	·89
4	Digits	5·75	3·45	·61

Thus of all the tests the Digits test is the least reliable. The Means again clearly indicate how much easier it is to remember meaningful material than to remember senseless material.

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[1] For further information about this formula the reader is referred to W. Brown: *The Essentials of Mental Measurement.* Cambridge, 1911; 50 pp.; and to P. Sandiford: *Measurement in Education* (*Journal of Experimental Pedagogy*, 1912, I, No. 3).

[2] As suggested by Spearman: *Correlation Calculated from Faulty Data* (*Brit. J. of Psych.*, III, 1910, 275).

[3] Fuller information about this ormula will be found in Dr. Brown's book cited above; pp. 51-53, 63, 121, 124, 142-144.

The entire and partial coefficients between every possible pair of tests are given below :—

Tests.	1	Tests.	2	Tests.	3
1.2	·67±·06	12.3	·57	12.34	·59
		12.4	·68	12.43	·59
1.3	·43±·09	13.2	·10	13.24	·13
		13.4	·45	13.42	·13
1.4	·39±·09	14.2	·42	14.23	·43
		14.3	·42	14.32	·43
2.3	·55±·07	23.1	·39	23.14	·37
		23.4	·55	23.41	·37
2.4	·12±·11	24.1	−·21	24.13	−·16
		24.3	·12	24.31	−·16
3.4	·03±·11	34.1	−·17	34.12	−·09
		34.2	−·04	34.21	−·09

The numbers in the columns headed "Tests" denote the numbers given to the tests in the previous table. Column 1 represents the entire coefficients (along with their probable errors) between every pair of tests. Column 2 represents the coefficients obtained between any two tests when the correlation of each with one of the remaining tests is made constant. The coefficients of Column 3 represent the extent of the correlation between any two of the memory series when the correlation of each with the remaining memory series is made constant.

8. Conclusions.

The above results afford additional evidence against the existence of a general memory faculty[2]; thus memory for Digits is uncorrelated with memory for a Narrative or for Concrete Terms; one would expect to find a definite positive correlation in every case if the faculty theory is true. The small initial positive correlations between memory for Digits and Narrative, and between the former and Concrete Terms, become negative in the corresponding partial coefficients. It is also evident that the correlation between two memory series is often due to the correlation of each with other memory series. Retention is not an elementary process, but is decidedly complex. If we assume that the ability to retain any memory series is made up of many factors, then, if two different memory performances are considered, it may happen that certain factors are common to the two series. It is the extent of this coincidence which is represented by the correlational coefficient.

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[1] The Standard Deviation is the sq. root of the mean of the squares of the individual deviations from their mean, and measures the variability of individual measurements about their mean.

[2] This agrees with the conclusion of Sleight: *Memory and Formal Training* (*Brit. J. of Psych.*, 1911, IV, 455).

Further, in the case of three different memory performances, it is still possible to have factors which are common to the three series. The partial coefficient expresses the extent of the similarity between any two of the series when the part which is common to all three performances is made constant. The argument may be extended to include an indefinite number of performances. Thus we see that the correlation between Narrative and Concrete Terms (·55) is due in part to the correlation of each with Nonsense Syllables, but is independent of the correlation of each with Digits, since when the influence of memory for Nonsense Syllables is made constant, the correlation falls from ·55 to ·39, but for " Digits constant " the value remains unchanged. The correlation between Concrete Terms and Digits (·12) is similarly dependent in part upon the correlation of each with Nonsense Syllables, for when the part common to all three series is made constant, the correlation decreases to − ·21.

Nonsense Syllables and Narrative are chiefly connected through their respective connexions with Concrete Terms, as that part of memory for Nonsense Syllables which is not common to memory for Concrete Terms is only connected to the extent of ·10 with that part of memory for Narrative which is not common to memory for Concrete Terms. The entire coefficient for Nonsense Syllables and Narrative is ·43.

The presence of that form of memory which is involved in the retention of a series of Digits, and also in the retention of other memory material, has a damping effect upon the correlation between these other memory series. Thus the effect of making " Digits constant " is to increase the correlation between the remaining series.

It is interesting to note that those abilities involved in the memorizing of Nonsense Syllables and Digits which are not common to those in Concrete Terms or Narrative, are more closely related than are the entire performances of Nonsense Syllables and Digits.

One would think that the correlation between Narrative and Concrete Terms would have been higher than that between Concrete Terms and Nonsense Syllables. Evidently a series of disconnected though familiar words is vastly different from a passage of prose from the standpoint of memorization. Also the Concrete Terms and Nonsense Syllable Tests were very similar in form and in the method of application, hence the relatively high correlation between these tests is quite conceivable.

The results also show that the correlation between Concrete Terms and Digits remains the same when the correlation of each with Narrative is made constant; similarly that between Concrete Terms and Nonsense Syllables is independent of the correlation of each with Digits.

It is hoped that further experiments will be carried out along the lines indicated above, the results of which will enrich our knowledge of the inter-relation of different memory performances.

Test 1.	*Test 2.*	*Test 3.*
TEV	Bath	28
GEB	Land	49
MIB	Rope	37
NER	Tube	19
VOF	Sand	65
GUH	Corn	93
WAH	Mark	58
SEB	Gold	72
NIS	Note	61
ZAN	Mile	84

Test 4.

"There was once a miser who had bought a monkey in the hope of selling him again at a profit. One day the miser went out. During his master's absence the monkey saw a neighbour throw a penny out of the window to a poor lame man who was passing. He at once opened the miser's money-box, and began to throw down into the street all the gold pieces which his master had hoarded with such care. A crowd of people ran up, and picked up as many coins as they could. When the box was almost empty, the miser came up the street, and saw with dismay what was going on. 'Be not angry, my friend,' said the neighbour. 'What is the good of hoarding money in a box without benefit to yourself or your neighbour!'"

A READING TEST.

By MABEL HASSALL and LILIAN VARLEY.

PARTLY with a view to comparing the reading efficiency of the children of two schools in the city, and partly with a view to examining the nature of the mistakes made by individual children, and their varying reading rates, the same test was given in each of our schools. A whole class was taken in each case—the senior class in an infants' school. The schools contain children of approximately the same social grade—children of artizans and clerks for the most part. In school A, the method of teaching reading is what is sometimes called "the sentence" method. Words are never taken singly but always in sentences, and the sentence has always a message for the reader. The Phonic analysis of words is not taught, though, as will be seen, a certain number of children revert to it. The teacher tries to enforce the idea that Reading consists in getting the meaning out of the print. In School B there is no such rigidity of method. Whilst "meaning" is kept prominently before the minds of the children, they are taught the phonic analysis of both spoken and printed words.

The test consisted in giving a story which none of the children had either seen or heard before. It was printed on a sheet of paper, in the same type and form as shown on page 299. The same printed sheet was used by all the children in the one school, but the teacher had a separate printed sheet for each child which she used in following the reader. On this sheet she noted the name and age of the child, the time he took to read the piece through, and by marking the text she was also able to keep a record of the various errors he made.

Such a sheet with the errors actually noted is reproduced below. A word with the pen drawn through means that it was unknown, and that no attempt was made to guess it or unravel its form. In such cases the teacher told the child the

Beat. Fanand 6' 15"
7. 6m.

THE BOY WHO CRIED "WOLF!"

There was once a shepherd-boy who kept leeped his ~~flock~~ at a little distance from the ~~village~~. Once he thought he would play a ~~trick~~ on the villag~~ers~~ and have some fun at their ~~expense~~. So he ran to~~war~~d the village crying out, with all his might,—

"~~Wolf~~! Wolf! Come and help! The ~~wolves~~ are at my lambs!"

The kind villagers left their work and ran to the field to help him. But when they got there the boy laughed at them for their ~~pains~~; there was no ou wolf there.

Still ~~an~~other day the boy tried the same trick, and the villagers came running to help and got laughed at again.

Then one day a wolf did ~~break~~ into the fold and ~~began~~ killing the lambs. In great fright, the boy ran u for help. "Wolf! Wolf!" he ~~screamed~~. "There is a wolf in the ~~flock~~! fold Help!"

The villagers heard him, but they thought it longi was another ~~mean~~ trick; no ow one paid ned the ~~least~~ pained a~~ttentio~~n, or went near him. And the shepherd-boy lost all his sheep.

That is the kind of thing that happens happeans to people who lie: even when they tell the ~~truth~~ no one be~~lieves~~ them.

pointed

word. The other markings probably explain themselves. A study of the example given brings out the special difficulties of a child who is being taught to read on the sentence method. One sees clearly where meaning overcomes his visual apprehension, and where visual impression is again stronger than meaning. The time taken by the child is considerably above the average, as reference to the table will show.

In all, 85 children (43 girls and 42 boys) were examined at School A, and 60 children (51 boys and 9 girls) at School B. The average age in the former case being 7 years 2 months, and in the latter case 7 years 6 months.

At School A, the Head Mistress made the following notes :—

1. The analytic sounding of words was always discouraged in the class-teaching, but nine boys used this method as it were "instinctively" when face to face with a strange word form. Such a method of attack did not occur to any of the girls. Of the 47 words attacked by the boys in this way, only 19 were solved, and only one boy got through all his difficulties in this way. Another boy got at the word "flock" in this way on seeing it the first time, but failed the second time the word occurred, whereas "word-readers" who were told the word "village" once usually got it next time and found no difficulty with villagers.

2. Analysis which succeeded with "screamed" was not successful with "least."

3. In his struggle for details the letter reader often lost his grip of the meaning. A word-reader says "shouted" when the word is "screamed," "rushing" for "running," "field" for "fold," and the like. The letter readers tended to rely very much on the first letter, or give the first word that the initial group of letters brought to their minds—"leaves" for "lie," and the like. On the other hand the word reader who points to individual words and allows his mind to dwell upon them makes substitutions equally irrelevant to the meaning but obviously suggested by the whole form of the word—"kind" becomes "king," "thought" is rendered "brought," "fold" is "flood," "fright" is "fight," &c.

4. The girls proved to be better readers than the boys, though they had been taught in the same classes, by the same teachers, and for the same length of time. The comparison is not very simple, because in the first place the boys are, on the average, slightly younger (three months), and about 20 per cent of them use the above synthetic method of arriving at unknown words. The average time taken by all the boys was 4 minutes 3⅙ seconds, that of the girls was 3 minutes 11½ seconds, but if the letter readers are excluded from the boys' average, their time is reduced to 3 minutes 3 seconds. In respect of errors, the boys (all included) made three mistakes to the girls two, but without the letter readers the proportion becomes 8:7. Six girls read the piece without mistake of any kind ; no boys reached this standard, although three only fell short through the omission of one word, and two others through inserting a word that was not there.

5. "Attention" was unknown to 29 boys and 29 girls, "expense" to 18 boys and 14 girls, "least" was given as "last" by 12 boys and 13 girls, "laughed" was unrecognized by 7 boys and 4 girls, and "no" was read as "on" by 14 children.

The Head Mistress of School B writes :—

1. Of the 51 boys, 33 made no attempt to build up unknown words out of their constituent letters, 12 spelled them in the conventional way, 6 "sounded" them. For the 9 girls, the numbers in these classes were 6, 3, 0, respectively.

2. 21 children out of the 60 showed decided signs of fatigue before they had finished what was for them a long piece.

3. "Pains" was the word that gave most trouble ; it was read as "pan," "pans," "pins," "plans," "pen," "mains," "plains," and "silliness." They are not familiar with the word used in the sense of "effort." Obviously the boy who read "silliness" has the meaning of the passage in his mind. "Lie" was read as "like," "lives," "living," "lay," "died," "die," "lived" and "die." Eleven children said "on" for "no," seven said "field" for "fold," and nineteen "sheepherd" for "shepherd."

4. In the case of 16 children, when they reached a word of which they were uncertain, it was their habit to go back a word or two, say these over again as if in the hope of being carried over the difficulty. When they finally got the strange word form they would repeat it as if to fix it. Was this just fixation of phrase or fixation of a link between visual impression and auditory equivalent?

6. Of the 13 words sounded by boys, 8 of them were found correctly every time; the successes in the case of the other 5 varied with individuals.

7. Of the 24 words spelled by girls, 14 were always found, 7 were never found, and the other 3 varied.

8. Of the 36 words spelled by boys, 23 were always found, 5 never, and 8 varied. "Screamed," "villagers," and "distance" were never got at by this method.

TABLE OF TIMES.—SCHOOL A.

	Average.	Mean Deviation.	Maximum.	Minimum.
BOYS (43).				
Whole-word readers (34)	3′ 3″	1′ 16½″	6′ 27″	1′ 17″
Letter-sounders (9)	6′ 4½″	1′ 19″	8′ 31″	2′ 53″
GIRLS (42).				
Whole-word readers (42)	3′ 11½″	1′ 8″	7′ 5″	1′ 22″
SCHOOL B.—BOYS (51).				
Word-readers (33)	2′ 32″	·54″	6′ 18″	1′ 15″
Spellers (12)........................	9′ 18″	2′ 39″	15′ 12″	3′ 17″
Sounders (6)	6′ 42″	1′ 39″	11′	5′

N.B.—The difference in time taken by the non-word readers in the two schools is no doubt partly accounted for by differences in procedure. Times allowed for struggling with individual words were not fixed.

REVIEWS.

The Effects of "Observational Errors" and other Factors upon Correlation Coefficients in Psychology.[1] By Dr. William Brown.

IN this paper Dr. Brown gives a brief introductory sketch of a detailed research into the correlation of errors of measurement, carried out three years ago. The experiment was a very thorough one, and when the calculations are completed the results obtained should be interesting and very accurate, for the nature of the experiment was such as almost entirely to eliminate "chance factors," or "accidental" deviations. It is not, however, upon this portion of the paper that I wish to dwell. The best introduction I can give to the few criticisms which I have to offer—be it understood, from a purely mathematical point of view—may be given in Dr. Brown's own words:—

"The object of the present short paper is to deal . . . with one or two of the more salient difficulties of method, and so to clear the ground for the new line of investigation into mental variation . . . The main difficulty is that of the *assumptions* involved in the use of mathematical formulæ. It might have been expected that such assumptions would, wherever possible, have been tested on actual psychological data. Yet those who suggest these formulæ in psychology seem singularly oblivious of the necessity of this precaution. Instead of facts we are given theoretical discussion. It was, for example, the merit of Prof. C. Spearman to suggest a mathematical method of eliminating 'observational errors' in the correlation of series of mental measurements, but I was able to show, by empirical tests, that the assumptions upon which his formula was based were incorrect. In response to this criticism he has modified his formula, but unfortunately the new form still involves assumptions that are not empirically justified.

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[1] *The British Journal of Psychology*, Vol. vi, Part 2, October, 1913.

The essence of the new method is to separate (in thought) the 'regular' deviations, which are due to such factors as practice, fatigue, habituation, &c., from the so-called 'accidental' deviations. The former, which may have correlations of their own with one another, and with the two abilities whose correlation is sought, are to be eliminated by an appropriate grouping of the series of measures of the two abilities."

Let the series of observations made be divided into two groups, *a* and *b*. Let x_a, y_a = average measure of one particular individual in group *a* for performances *x* and *y* respectively. Let x_b, y_b = average measure of *same* individual in group *b* for performances x and y, respectively.

Then the theory requires that the two product moments $S(x_a y_a)$ and $S(x_b y_b)$ should be equal to one another.

Dr. Brown then proceeds to test this equality in the case of the experiment already referred to, and also in the case of two tests applied to all the boys of eleven years of age in a certain London school. Each test was repeated six times. Only certain *average* results are given in the paper, but they will, I think, be sufficient. For convenience, I copy the figures here.

TEST X. AVERAGE MARKS PER BOY.

No. of Boys.	I	II	III	IV	V	VI
3	444·0	456·0	519·0	556·0	573·0	573·3
11	470·0	506·6	561·8	620·8	626·0	651·8
19	482·8	517·8	582·5	626·3	637·4	678·3
7	543·3	574·9	677·8	816·8	853·0	881·1
			TEST Y.			
3	107·7	127·7	144·7	169·7	170·3	194·0
11	116·5	146·5	181·5	198·1	231·5	246·2
19	124·1	149·8	176·9	196·2	218·1	239·3
7	149·4	174·4	218·0	239·0	257·1	283·3

Dr. Brown takes the three different pairs of groups *a* and *b* which Prof. Spearman suggests as likely to lead to accurate results, and he shows that in each case the difference between the two product moments considered is at least three times the probable error of the difference. In his own words: "The conclusion to be drawn from these empirical tests is that either the various methods of grouping (which Spearman himself recommends) have not effected the elimination of the 'regular' deviations, or the residual 'accidental' deviations are not uncorrelated with one another or with the abilities themselves, or that both alternatives are realized. One cannot help feeling . . . that no assumptions as to the correlation or non-correlation of ('accidental') deviations are in the least justified."

It may seem somewhat rash to suggest yet another grouping of the observed values, but it is evident that there must be a definite method in our selection of groups. The method may, and probably must, vary as we pass from one set of observations to another of a different kind, but it should be consistent for a given set of observations of two abilities which it is desired to correlate. The first suggestion that occurs to one is based on an analogy with formulæ of approximation to the values of definite integrals.

Let there be an *odd* number of consecutive observations of a certain ability; take the even observations as one group; and take the odd observations as the other group, but give all except the first and last of the group double weight. This will require at least five consecutive observations.

The rule here stated is not to be regarded as a definite, rigid formula; rather, I should say, that the grouping in any particular case is so to be chosen that the requirements of Dr. Spearman's theory are to be, as nearly as possible, satisfied, but I have found the above rule to work well in the particular case here considered.

It would be interesting to know whether it would work equally well when the individual performances of the various boys are given. I have here, of course, to use the average values given in the tables above. Taking the first five observations, and grouping them as suggested, we have to calculate $S(x_a y_a)$ and $S(x_b y_b)$ where x_a is found from the symbolical equation.

$$x_a = \tfrac{1}{4}\,(\text{i} + 2\text{iii} + \text{v}),$$

and x_b from

$$x_b = \tfrac{1}{2}\,(\text{ii} + \text{iv}).$$

These equations, I think, explain themselves.

We then have

$$40\, S\,(x_a\, y_a) = \left\{\begin{array}{r} 3 \times 513{\cdot}7 \times 141{\cdot}8 \\ +\ 11 \times 554{\cdot}9 \times 177{\cdot}7 \\ +\ 19 \times 571{\cdot}3 \times 174{\cdot}0 \\ +\ \ 7 \times 688{\cdot}0 \times 210{\cdot}6 \end{array}\right\} = \left\{\begin{array}{r} 218{,}490 \\ +\ 1{,}084{,}700 \\ +\ 1{,}888{,}700 \\ +\ 1{,}014{,}100 \end{array}\right\} = 4{,}205{,}990$$

So that

$$\tfrac{1}{10}\, S\,(x_a\, y_a) = 10{,}515.$$

While, in exactly the same way,

$$\tfrac{1}{10}\, S\,(x_b\, y_b) = 10{,}453.$$

The difference between these two values is 62, which is considerably less than one per cent of either, and less than the probable error of the difference.

On the other hand, if we take the last five observations, our groups are represented symbolically by the equations

$$x_a = \tfrac{1}{4}\,(\text{ii} + 2\text{iv} + \text{vi}),$$

$$x_b = \tfrac{1}{2}\,(\text{iii} + \text{v}).$$

In this case I find

$$\tfrac{1}{10}\, S\,(x_a\, y_a) = 12{,}761,$$

$$\tfrac{1}{10}\, S\,(x_b\, y_b) = 12{,}921.$$

Here the difference of the two values is 160, which is about one and a quarter per cent of either. This also is within the limits allowed by the probable errors of the results.

If the calculations were repeated with the "individual" values of the x's and y's, I feel fairly confident that as satisfactory a result would be obtained, but, owing to the considerable variations which evidently exist in the numbers assigned to the various boys in any one set (class), it is impossible to predict the result of such a calculation with any real acccuracy. It is for this reason that I have not here calculated the coefficient of correlation given by the suggested grouping.

The method of "weighting" adopted in the rule given above, when applied, as here, to five successive measurements, seems, at first sight, to imply that the middle one of the five measurements is twice as accurate as any of the other four; but this is not the case. Measurements ii and iv, for instance, may be given any, the same, weight, and it will make no difference to the resulting mean value. Again, when the last five of the six measurements are taken, it is apparently iv which is considered to be twice as accurate as the other measurements, and this does not alter the character of the result. The truth is that the idea underlying the rule is not at all that one measurement is better than another, but it simply depends on the fact that the measurements are *consecutive*.

Suppose that the values of the product $x_a y_a$ for any particular individual, a, are plotted against the number, n, of the measurement, n being, of course, the same for x and y. The result will be a number of points, and the value of $S\,(x_a\, y_a)$ *for this individual* will be the average length of the ordinates of these points. The final value of $S\,(x_a\, y_a)$ required may then be taken as the arithmetic mean of the values so determined for all the various individuals. There will be several ways in which the average of these ordinates may be taken. The most obvious is their arithmetic mean.

The average used above is, however, that corresponding to the area of the irregular figure formed by joining the extremities of consecutive ordinates. Thus, let AL, BM, CN, be three consecutive ordinates. Then the mean of the two trapezoids, ABML and BCNM is evidently $\frac{1}{2}[\frac{1}{2}(AL + BM) + \frac{1}{2}(BM + CN)] = \frac{1}{4}(AL+2BM+CN)$, because LM and MN are both of unit length. The fact that the middle ordinate receives a double weight is thus seen to be due merely to its position.

But an average, which for most purposes is probably more accurate, is found by drawing a smooth curve through the extremities, and then taking the area included between this curve and the extreme ordinates, divided by one less than the number of ordinates, as the average required. Formulæ sufficient to enable one to write down the average corresponding to the smoothest curves which can be drawn through as many as eleven points are to be found in Bertrand's Calcul Intégral, Art. 363.

J. R. WILTON.

MORE MONTESSORI.

The Montessori Principles and Practice. By E. P. Culverwell, M.A. (xvii + 302 pp.) Bell & Sons. 3/6 net.

Montessori Schools. By Jessie White, D.Sc. (Lond.) (185 pp.) Oxford University Press. 1/- net.

MONTESSORI literature in English is growing apace. Gradually, no doubt, we shall gather material enough to form a just estimate of the final value of the contribution which its distinguished originator has made to educational thinking. The two books before us differ both in origin and purpose. Professor Culverwell is a sympathetic expounder of the theory and practice as it is set out in the "Montessori Method." Dr. White has spent some months in the Montessori Schools of Milan and Rome, and she tells us faithfully what she saw there. The one book is an admirable commentary on the other, so far, at least, as the practical outcome is concerned.

There is so much admirable and satisfying doctrine in the Montessori text that its further exposition and emphasis, in spite of the fact that it can hardly be called new, is all to the good. The great defect of these expositions is that they present too roseate a picture. Nothing in Montessori's own work rings so true as Tolstoi's description of his school at Yasnaya Polyana. The nurse who interferes with her charge's play in order that he may arrive at home at the proper time for his meal is reproved. It is an improper interference with the child's effort to educate himself. Children "grow up into writing," arriving there "as if by miracle." If only sometimes the children went wrong, if only sometimes the method did not succeed, it would be much more convincing.

Professor Culverwell properly devotes considerable attention to discussions of general principles. The concepts of Spontaneity and Liberty are treated at length, and a chapter is given to Physiological Education. We are not always able to follow him. What evidence has he for the statement that "our sense organs are far below the standard for which nature designed them," or that the "hardy savage never suffers from the effects of a draught"? Would he have each of the senses trained to their highest potential? What sort of man should we get if we added together the sensory refinement of a professional billiard player, a winetaster, tobacco specialist, and expert milliner? He avoids the fundamental problem of whether mind is a synthesis of sensory activities as the physiological position seems to suggest. How far physiological determinism will carry us is admirably shown in Montessori's "Pedagogical Anthropology"—a book which had not, I think, appeared in its English dress until after Professor Culverwell's own contribution to the problem was in the press.

Similarly we find difficulty in his treatment of spontaneity. "Play is not so spontaneous as it appears." Instincts and reflexes are not spontaneous; they are, rather, "mechanical"; indeed, with fuller knowledge, our concept of "spontaneity" will probably disappear altogether. It is a working hypothesis in the meantime, and it is used to cover all that part of human nature which is modifiable! What will yield to external force is spontaneous, what will not is mechanical! The more molluscous and the less vertebrate we are the greater our spontaneity! Surely such a result is something more than "a verbal proposition."

The exposition of the nature and use of the didactic material, Professor Culverwell is admirably clear and suggestive—indeed, this is true of the whole book,—but he fails to do justice to its critics. Thus he defends the method of teaching to write by analogy with the modern method of teaching to swim, neglecting altogether the difference which comes from the fact that in the case of the would-be swimmer, he knows what he is after, though, by hypothesis, the child who is learning to write has no inkling of what his finger gymnastics are leading to!

But apart from the theoretical discussion, there is the practical question of what this apparatus is going to achieve in the hands of the rank and file of the teaching profession. Dr. White's book inferentially answers that. Even in the city of its origin, where the work is being done under the spell of Mme. Montessori's personal influence and charm, "assistants are too fond of doing things for the children," "they have not imbibed the spirit of the method," "the material is taken out of the cupboard by the attendant, and the children are told not to talk while it is being given out," "slates and writing books are got out by the directrice," "she gives the solid insets to the three youngest," "the broad stair to a little boy in the back row, and the plane insets to a little girl sitting further forward." At Milan, no respect for toys was shown by the children, picture books were rather ruthlessly treated, but "the Montessori material was as carefully used and put away in as orderly a manner here as elsewhere!" In Rome, again, "a boy brought out a drawing and wanted to go on colouring it, but was told to put it away." The children occasionally indulge in free fights, and the directrice "had a struggle with a little boy who refused to sit down."

It would be misleading if these citations led anyone to think that Dr. White's book is written in an adverse spirit. On the contrary, she is convinced that the "didactic material" in the best that we know, and her story is throughout written in the fullest sympathy with Dr. Montessori's ideas. That makes the record of such facts as I have noted all the more suggestive. One cannot help feeling that by committing herself to apparatus Dr. Montessori has made a grave mistake, for it cannot fail to meet the same fate as the gifts and occupations which Fröbel invented in trying to find a universal avenue to the soul of the child.

J.A.G.

EDUCATION REFORM.

Steps towards Educational Reform. By C. W. Bailey, M.A. (vi + 111 pp.) Cambridge Press. 1/- net.

Where Education Fails. By Preston Weir. (114 pp.) Ralph Holland & Co. 1/- net.

THE two books form a natural complement to each other. Mr. Weir's is, as its title indicates, mainly critical; Mr. Bailey, on the other hand, is constructive and only incidentally or inferentially critical. The general tone of Mr. Weir's criticism is rather like a lament for the times that are gone. He finds the Elementary Schools inefficient because "the authorities have for the last few years been importing into them all the weaknesses of the Secondary Schools." He mourns the loss of the Pupil Teacher System, which, at any rate, gave us practical teachers, trained to the management of classes and the imparting of knowledge. But these unquestionable advantages have been sacrificed to the vague idea of bringing higher influences to bear on the Elementary School. In the Elementary School, nowadays, everything is done for the children, "soft pedagogics'' have won the day. The old external annual "examination was a charter of freedom to parent, teacher, and child."

Mr. Weir is not well versed in modern psychological research. He thinks "spelling and arithmetic are excellent for training accuracy and concentration"; moreover, spelling is also a capital means of "cultivating observation." He writes a good deal about the "training value" of school subjects, and says that the "training component in education is practically neglected." Indeed, he comes very near to the ancient doctrine that anything will do for school if it is only difficult and dry enough.

In spite of this weakness in the writer's equipment, the book has a message of warning which cannot be lightly set aside, and it is both a relief and a help to take up Mr. Bailey's thoughtful volume after his rather depressing pages. These "Steps towards Educational Reform" are admirably and suggestively described. He takes the sound view that such reform is not a question of administration simply. We are, in fact, over-administered—the teacher is soured by the feeling constantly impressed upon him that "he is bottom dog." Self-contained schools (implying the abolition of the cookery and woodwork centres—a weariness to the spirit of every zealous schoolmaster) are his ideal, staffed by teachers liberally educated, with a real respect for their vocation and versed in modern educational research. His all-too-brief comments on curricula, examinations and the like clearly come from a genuine pedagogical workshop, and without committing oneself to every suggestion the book contains, one may safely commend it to all who are professionally or otherwise interested in Education as a real contribution to the subject which it treats.

J.A.G.

Medical and Sanitary Inspection of Schools. By S. W. NEUMAYER, M.D. (vi + 318 pp.) Lea & Felbiger (New York).

THIS handsomely printed volume is written for Health Officer, Physician, Nurse, and Teacher. The author has had long practical experience of the work of medical inspection and his primary object has been to produce a "trustworthy map for those who undertake the work." The earlier chapters dealing with questions of administration will be of interest to English readers because they relate almost exclusively to American practice. There can, from the teachers' standpoint, be no objection to the position assigned to the doctor and his various assistants by Dr. Neumayer. There is no claim that the medical man is going to determine the type of education which each child is going to receive. He is in the school to discover and treat disease or physical defect, and to free the school and the community from disease-producing conditions. With education as such, *quâ* medical man, he has nothing whatever to do. This is clearly the author's interpretation of his position, though he devotes the last chapter of his book to what medical men have got into the way of calling "mentality." Here, naturally, we come upon the weak side of the teacher's case. His impressions of feeble-mindedness are not to be taken too seriously. The doctor is "to decide upon the degree of mental dullness." It may be true that the rank and file of the teachers are incapable of any such delicate determination, but what proportion of the 1,111 medical men at present working in England are capable of it? This is the business of the trained psychologist and, failing him, the teacher's word makes a *prima facie* case which few medical men are in a proper position to gainsay, unless of course there chance to be physical defects present which only a thorough medical examination can discover.

The classroom teacher has not time to make such detailed mental examinations of difficult children as proper diagnosis entails, but here the head master should find a place, if only he had had the requisite training. Surely it would be wiser to see that he has it, than to harass him in his work by the multiplication of external officials who cannot in the nature of things enter fully into his problems. The schoolmaster who is interested will find this last chapter of Dr. Neumayer's book suggestive and helpful. It contains a full account of the Binet tests, the method of using them, and the modifications American experience suggests. The book is extremely well illustrated.

J.A.G.

(1) "**The Teaching of Arithmetic.**" By David Eugene Smith, Professor of Mathematics in Teachers College, Columbia University; pp. v + 196. London, &c. Ginn & Co., 1913; price 4s. 5d.

(2) "**Problems in the Teaching of Secondary Mathematics.**" By David Eugene Smith; pp. 30. London, &c. Ginn & Co., 1913.

(3) "**Mathematical Education.**" By G. St. L. Carson; pp. v + 139. London, &c. Ginn & Co., 1913.

(1) THIS is not an entirely new book; most of its contents made a welcome appearance in 1909 as one of the well-known *Monographs* issued from Teachers College. Apart from the additions—consisting chiefly of historical matter and a chapter on Number Games—the value of the book demands more than a formal notice of its promotion to cloth covers. Prof. Smith is an enthusiast, but his enthusiasm is well-ordered and never loses touch with the practical conditions of school teaching, He is learned, but his learning is so modestly disguised that it appears to the ordinary practitioner merely as the soundest common sense. By these qualifications he has justly earned his position as one of the most influential of contemporary writers upon the teaching of mathematics. The first eleven chapters of the present work deal with the aims, scope, and general methods of instruction in arithmetic. In these, Professor Smith offers his readers a sound explanation and synthesis of the utilitarian and cultural aims of the subject and a series of brief but clear and useful discussions of methodological principles. In ch. XII he specifies a number of unsettled questions of procedure suitable for investigation in schools attached to training colleges. In ch. XIV he gives a series of interesting suggestions based upon the studies of Number Games to which he has recently given so much attention. This chapter deserves the special consideration of teachers of young children. The last eight chapters are devoted to discussion of the curriculum in arithmetic, year by year. Though the author has here in view the requirements of American schools, his recommendations will be found worthy of careful study by teachers in this country. In short, there is no better or safer manual to put into the hands of the student in training.

(2) THIS pamphlet is the text of an address delivered before the New England Association of Teachers of Mathematics. Those who are conversant with recent discussions "on this side" about the position of mathematics in the curriculum of secondary schools for boys and girls will be interested to find that our American colleagues are exercised about much the same questions. Professor Smith's treatment of these questions is characteristically moderate and helpful. The literary form of his address makes it delightful reading.

(3) THE fact that Mr. Carson's *Essays* are "introduced" by Professor Smith makes it appropriate to notice them in connexion with the professor's own works, though their author needs no introduction in this country. Most of the essays have already appeared in the *Mathematical Gazette*, the *Special Reports of the Board of Education*, and elsewhere. The author has, however, done good service to the cause by reprinting them in book form. Two are published (apparently) for the first time. In one of these ("The Useful and the Real") Mr. Carson offers some sound criticism of the too-prevalent assumption that instruction based upon topics which are "real" and "useful" to certain adults (e.g., an engineer or a demographer) will necessarily have the virue of "reality" for the school pupil, and of the converse principle—that nothing which is not real and useful in this sense should be studied in the mathematical lesson. In the other ("A Comparison of Geometry with Mechanics") his thesis is that the earlier teaching in both subjects should aim at training the pupil to make deductions from the principles which he has gathered as the result of common spatial and mechanical experience, and that the reduction of geometrical and mechanical truths to systems depending on a minimum number of independent assumptions should be postponed to the later stage of the course. The little book should find a place in the library of every training college for secondary teachers. W. A. BONE.

Story-telling in School and Home. By E. N. Partridge and G. E. Partridge. (323 pp.) W. Heinemann, London. 3s. 6d.

THERE are two parts within the one cover—The Art of Story-telling, containing short chapters on the different types of stories: Fairy Tales, Historical Stories, Fables, Myth, Epic Stories, and Retold Stories. These are collected from varied sources; a fairy story from South Africa, a cradle tale of Hinduism, a Tibetan story, a Chinese fable, a Russian story. They are told straightforwardly and simply, and should be welcome to other story-tellers. They have been told to the children of the Worcester Playgrounds, Bancroft School, and Garden Cities of Worcester, Massachusetts. There is a helpful list of suggestive reading in connexion with story-telling. The illustrations are not material to the book, with the exception of the two—Indian Stories and a reading from Homer, which serve the purpose illustrating the Story Festival. W. A. BONE.

A School Course on Geometry. By W. J. Dobbs. Longmans, Green & Co.

IN this splendid little book we have at last a systematic course of elementary geometry based on the axioms of motion and superposition, which should well repay its adoption as a first course in this subject. In addition to this, the main and happiest feature of the book, one or two other points are worth notice, particularly the introduction of the elementary notions of trigonometry and analytical geometry, thereby co-ordinating in one book the groundwork of three separate branches of future study. We may only hope that the book has arrived in time to check the decadence of geometrical thought which has followed the abolition of Euclid's "Elements." G.H.L.

How I Kept my Baby Well. By Anna G. Noyes, B.Sc. (193 pp.) Warwick & York. $1·50

THIS book is an acconnt of a mother's treatment of her baby and the records she kept of it. She gives detailed charts showing the amount and kind of food, times of feeding and the results on the baby's digestion, sleep, and so on. The book is interesting, because the author claims that by her careful study of her child the disorders which are only too common among young children were avoided. It would be well if the book should stimulate other mothers with the necessary scientific training to follow the same course; we might then in time have a large amount of material available from which to draw generalizations upon infant management. The charts, though most carefully kept, lose in effectiveness, as, on account of their minuteness, they are often difficult to follow. The book is fully illustrated by pictures of mother and baby, but these vary greatly in interest. Some of them serve no particular purpose. If such were left out and the rest were greatly enlarged it would be a distinct gain. A.N.G.

BOOKS RECEIVED.

The Socialized Conscience. By J. H. Coffin. (viii + 247 pp.) Warwick & York. $1·25.

The Dynamic Foundations of Knowledge. By A. Phillip, M.A., LL.B. (xii + 318 pp.) Kegan Paul.

The Purpose of Education, by St. George Lane Fox Pitt. (ix + 83 pp.) Cambridge Press.

The Examination of School Children, by W. H. Pyle, Ph.D (v + 70 pp.) Macmillan Co. (N.Y.) 2/- net.
(A useful collection of psychological and physical tests, especially designed for teachers' classroom work.)

Moral Instruction, by F. J. Gould. (xii + 196 pp.) Longmans, Green & Co. 2/6.

TRAINING COLLEGE ASSOCIATION.

ANNUAL MEETING, 9TH JANUARY, 1914.

The Twenty-second Annual General Meeting of the Association was held at the University of London (in connexion with the "Conference Week" of Educational Associations) on January 9th, 1914.

MORNING SESSION.

Professor J. A. Green (President) in the chair.

(1) The Minutes of the last Annual Meeting were read and confirmed.

(2) The Annual Report and Balance Sheet for 1913 were adopted.

(3) Hearty votes of thanks were accorded to the outgoing Officers (President, Vice-Presidents and Hon. Secretary) on the motion of Rev. Canon Dennis and Professor Nunn.

Professor Green replied.

The President for 1914, Rev. Canon Stevenson, of Warrington Training College, here took the chair.

(4) On the motion of the President a vote of sympathy with the Principal of St. Paul's College, Cheltenham, whose College had been partly destroyed by fire on the previous day, was unanimously passed.

(5) The President then delivered the Presidential Address.

PRESIDENTIAL ADDRESS.

LADIES AND GENTLEMEN,

MY first words must be to acknowledge gratefully the honour you have done me by electing me, for the second time, to the Presidential Chair of your Association. When I consider those who have occupied this chair in recent years, with honour and distinction, I feel how unworthy I am to be allowed to follow them. My only claim to recognition is length of service. For 34 years I have been in Training College work, and for 30 of those years the Principal of a College. With the exception of our honoured member, the Principal of Tottenham, I think I may lay claim to having held the post of Principal longer than any of my fellow Principals. During that time I have seen many changes and gained much experience. It is this that emboldens me to address you.

A somewhat long array of Inspectors, many of whom became close personal friends, passes before my mind—Canon Tinling, the genial personality, who invariably addressed the students by saying, "You are not half so afraid of me as I am of you"; Canon Warburton, the grave and cultured scholar, to whom, I believe, the reading and recitation of those days was a trial, borne with Christian fortitude. With him ceased the days of clerical Inspectors for Women's Colleges, and Sir Joshua Fitch took his place. Wisest of counsellors and most trustworthy of guides, he did much to promote the improvement of our Colleges; Sir Evelyn Oakeley, whose one fear was that a fire should break out and no due provision made for escape; Mr. Scott Coward, brilliant conversationalist, charming companion, and whole-hearted reformer; Mr. F. W. Dale, with his large-hearted views and his genial and helpful presence; Mr. Barnett, whose own experience as a Principal enabled him sympathetically to enter into the difficulties of others.

Then the Women's Colleges were handed over to Lady Inspectors, as they will be to Lady Principals, and the "mere man" had better be silent.

As I look back over the past I am not going to play the part of *laudator temporis acti*. Far from it. In many respects I see wonderful advance and improvement in our Colleges. In the early days of my office the Colleges had no common rooms, libraries, laboratories, art rooms, &c. One classroom for each year did duty for all purposes. The life was hard, the recreation scanty and uninteresting. Literary, Debating and other such societies did not exist. I well remember the protest with which one lawn tennis net was provided, tennis being in the eyes of many an inelegant game for girls. We look on this picture and on this and we see the advance that has been made.

As for the calibre of the students, their previous education and our own syllabus, we have never been satisfied on these points; we are not satisfied now, and, so far as I can see, we never shall be.

As regards our Association, I can look back to its foundation, twenty-one years ago, in 1892. About forty Colleges were represented, and we numbered about 190 members. To-day eighty-two Colleges are represented, and the membership stands at 430.

I believe that we are gaining in influence, and that the Board of Education is increasingly ready to listen to representations which formulate the united opinion of those who know most of the inner working of our Colleges and the possibilities of our students. A recent and most gratifying proof of this may be found in the sympathetic consideration which the Board gave to the views of the Association touching changes in the syllabus, and the mutual and helpful co-operation which tended to the advantage of both.

During the past year we have lost by death three valued members of our Association. Miss Bishop, the first Principal of St. Gabriel's, Kennington, who bravely faced the difficult task of organizing a new College, a thorough educationist, a true lover of her work, one of large-hearted and enlightened views; she infused her own spirit into the College and quickly raised it to the high position it holds. Dr. Chapman for many years guided the destinies of Southlands. During his tenure of office much was done to improve and enlarge the College, and under his wise guidance it well filled the important position which it holds in the educational scheme of the body with which it is connected. He did not often speak in our discussions for he was of a retiring disposition, but when he did we listened to him attentively, for he spake with wisdom. Mr. O. Breden, for many years Vice-Principal of St. Mark's, Chelsea, who, among other services, did much to maintain the musical efficiency of his College at the high level which it has always held. By many generations of past students he will be kept in affectionate remembrance. We shall miss all three from our gatherings, and our deepest sympathy is offered to the Colleges who will miss them even more.

An important event of recent occurrence deserves some mention, viz., the formation of the Teachers' Registration Council. It is not necessary to recount the efforts which have been made since the year 1860 to supply this want. Those who wish to recall the history of these attempts will find it ably set forth in an article in the *Times Educational Supplement* for December 2nd, 1913. Suffice it to say, that from different causes the registration of teachers met with difficulties which wrecked one scheme after another. It is with the greater satisfaction that we chronicle the fact that the Teachers' Registration Council formed in February, 1912, issued in November 2nd, 1913, the conditions of registration for teachers, which have met with the general approval of those chiefly interested. It remains to be seen how much the teachers will avail themselves of registration. So far as our Association is concerned, it is much to be hoped that its influence will be brought to bear upon its members to induce them to register. In proportion to the number of members who register will be the amount of power and influence which the teaching profession will be able to exert. If the teachers of the country unite themselves in this solid phalanx they will wield a power on educational questions which will be well-nigh irresistible. As Professor Adams has said (and the mention of his name reminds me that our sincere thanks are due to him for his services on the Council as the representative of the Training Colleges): "To those teachers who go about asking what the register is going to do for them, the answer is—it all depends on what the profession does for the register."

There is grave danger that the cost of the year's training—rightly insisted upon—may deter many from taking it and thus keep their names off the register. Others may ask if the prospects of the profession offer an adequate return for the necessary outlay in equipping themselves for it. It brings us back to the old question of the salaries of teachers. We have waited patiently while we have seen vast sums spent upon the building and equipment of schools, while the remuneration of the teacher, who is far more important than the school, has risen but little.

Turning to this Session, we find ourselves caught once again in the meshes of the network of this organization of Educational Conferences. We can but express our gratitude to the Committee who have organized this series of Conferences, at the cost of much time and trouble and with no less skill and ability.

Two subjects will receive the attention of the Association during this Session. Demonstration Schools, though required by the Board of Education as a necessary part of the equipment of a Training College, are at present conspicuous by their absence. I have made some inquiries concerning the very few that do exist. They seem to me, at present, hardly to merit their title. That the College should have some voice in the appointment of teachers and in the drawing up of syllabuses, together with a somewhat extended admission of students, does not seem to fulfil the idea of a Demonstration School. Such a school, if it is to be a Demonstration School, in very deed must, it seems to me, be wholly under the authority of the Training College. This will generally raise difficulties with the Education Authority, and here is the crux of the problem. The matter is one of real importance, and we shall look with interest to what our speakers can tell us about it, and I trust the general discussion will be fruitful and helpful.

We are fortunate in having, as openers of our discussion, those who—like our Vice-Presidents, Miss Graveson, and Dr. Nunn—have been in touch with these schools in London, and Professor Findlay, whose unique school in Manchester is familiar to many of us.

The other subject which will be brought before us is that of Physical Instruction. It is a subject which has been brought into greater prominence of late years, and it would be idle to deny that its working has caused some difficulty and occasionally friction in our Colleges. It differs from other subjects (1) in the prescription of a rigid syllabus. That it is right that our students should fit themselves to teach the subject in Primary Schools is obvious, but somehow the methods taught in the Colleges are by no means the same as those used in the Schools, and hence difficulties arise. (2) The marks given by the College instructors are not accepted by the Examiners as they are in other subjects, and the estimate of the Examiner is based upon an examination which occupies a short time, and in which the student goes through the unreal experience of teaching a class of fellow-students.

Again, we feel it hard that a student who does well in Physical Training should be debarred from obtaining "distinction" because he has not done equally well in the subject of Hygiene. That he should be called upon to show good Theoretical knowledge as well as Practical skill is reasonable, but the examination in Hygiene deals with much more than this, and with a great deal of subject matter which is not essential to a capable mastery of the Theory and Practice of Physical Training.

St. John's College, Battersea, has for many years been noted for the excellence of its Physical Training, and in the hands of the Principal, Canon Wesley Dennis, we may be sure that this subject will be treated effectively.

This, ladies and gentlemen, is our programme. We trust that our discussions will be helpful to our work. That work was never more important than it is now. There is some cause for anxiety, especially in the falling off in the number of candidates for admission. We trust that this may be but a temporary difficulty, which will be removed ere long. Our work is arduous, responsible, and at times not without perplexity, but these are the characteristics of great and important tasks. On the other hand, it is full of interest and fruitful in good results.

To teach the teacher is to teach the nation. Let us go forth with good cheer on the path of duty which lies before us.

(6) The following Elections for 1914 were declared:—

Vice-Presidents—

Miss A. Lloyd Evans, Fulham Training College.
Professor T. P. Nunn, London Day Training College.

Hon. Secretary and Treasurer—

Mr. H. E. Griffiths, St. John's College, Battersea.

(7) A discussion on "Demonstration Schools" followed, opened by Professor Nunn, Miss Graveson and Professor Findlay.

PROFESSOR NUNN said:—

As the President has indicated in his address, questions concerning the provision and functions of Demonstration Schools are exercising the minds of most of us. We are unanimous in regarding the Demonstration School as an highly important adjunct to the established machinery of training; but we have, perhaps, not yet reached agreement in our views about its relation to that machinery. The subject derives its urgency from the fundamental change in the conditions of training which the recent policy of the Board of Education has brought about. Under the old system the young teacher acquired a considerable degree of mastery of the technique of his profession before he entered the Training College; under the new the College is directly responsible in all cases for the greater part, and in an increasing proportion of cases for the whole, of the practical training of its students. It follows that the College must be so equipped and organized as to be able, during the brief period of training, to exercise a strong and definite formative influence on the practical side of the student's work. The most important function of the Demonstration School is to be the main channel of this influence.

The aim here indicated may, in different circumstances, be best attained in different ways. The School may be used by some Colleges mainly for observation, by others mainly as a place where students may gain teaching experience more directly under the College control and supervision than is possible in the ordinary practising School. In either case it is essential that the School should, in respect of its curriculum and methods, express fully and unambiguously the mind of the College. In the Demonstration Schools of the London Day Training College (which are ordinary Schools of the London system in possession of no special advantages) it has been found possible to realize this condition, at least approximately, by the following means: As far as the discipline and administration of each department are concerned it is, like any other School, entirely under the control of the head teacher. On the other hand, questions of curriculum and method are determined by the College staff in committees on which the head teacher sits simply as a member though, of course, a very important member. In this way the School, while maintaining its corporate individuality, functions as a genuine intellectual organ of the College. That is to say, the curriculum and the methods of teaching the individual subjects thereof really exemplify the principles expounded by the lecturers in their classrooms. In the London Day Training College we hold the view that the best way to make use of a School thus organized and inspired is the second of the two ways I mentioned above—namely, to make the students actually teach in it for periods of not less than one term under the tutorial direction of the College lecturers, and the detailed supervision of the head teacher and his assistants. This, we hold, is the most effective method of bringing to bear upon the student that strong and definite formative influence of which I have spoken. I imagine, however, that even if the School is used chiefly for purposes of observation, organic unity of School and College is equally essential and can be obtained only by a similar method.

In any case it is evident, also, that a Demonstration School can fulfil its purpose only if the staff consists of persons of more than average professional intelligence who are interested not only in teaching children, but also in forming the young teachers of the next generation. It is useless to disguise the fact that a teacher in a Demonstration School must have somewhat special qualifications, and has to answer demands greater than those made upon the teacher in an ordinary Elementary School. The most pressing question at the moment is how to secure the services of such teachers for work of such fundamental importance. To my mind only one way is practicable, namely, to reward additional ability and additional service by additional pay. I have heard of only one plausible alternative to this policy. It is argued that the teacher of a Demonstration School works more immediately in the eye of those who are looking out for exceptional ability, and therefore has a better chance of promotion than his colleagues in ordinary Schools. This greater chance of promotion will, it is said, be his special reward. The fatal weakness of this argument is that the qualities which fit a person for usefulness in a Demonstration School are not necessarily those which lead to a head-teachership. It is true that a School of exceptional character and importance, such as the Fielden School at Manchester, may attract brilliant young people on their way to posts in Training Colleges, but it is evident that we cannot rely upon this as a general means of staffing our Demonstration Schools with the right kind of people. Most of us will be compelled—I confess, I think it well that we should be compelled—to draw our assistants from the rank and file of the teaching service. We must, therefore, be able to hold out to them some inducement of more universal attractiveness than promotion to a Training College, and better founded than the hope of speedy promotion to a head-teachership. I repeat that I find such an inducement only in the form of additional salary for special services rendered.

MISS GRAVESON said: The time seems to me full ripe for a discussion by our Association of this subject of Demonstration Schools. Owing to confusion in the minds of local authorities as to the scope and aims of the Demonstration School, there are many educationists in positions of responsibility who are ready to question the value and need of such institutions. The Board itself is divided in opinion as to their worth, and, partly as a consequence of this, we have a series of recommendations and even requirements in the Regulations for the Training of Teachers which the Board does not seem to have the will or the power to see carried out, and which many Training Colleges cannot carry out, if they would, unless the Board is prepared to help them.

What do we mean by a Demonstration School?

1. *It is not a Practising School.* The Practising School is a school of ordinary type, chosen chiefly on the grounds of its locality, i.e., its accessibility to the students, and the willingness of the head teacher to receive students. In staffing and equipment it should not fall below, but need not rise above, the average school. Students teach in it for regular and consecutive intervals of time, and gain a knowledge of the *ordinary* condition of school work. It represents what *is*.

2. *It is not an Experimental School.* In saying this I do not mean that educational experiments will not find a place in a Demonstration School, but I wish to differentiate schools of the Dewey and Fielden (Manchester) type, in which experiments can be undertaken and carried through by advanced students under very carefully supervised conditions, and much attention is given to practical psychological research. Such schools must be small, and the teaching must be given by people of a scientifically pedagogic turn of mind. Their number will be few and they are likely to be found in connection with University Day Training Colleges with postgraduate students.

2. Demonstration Schools are, to my thinking, simply schools worked under favourable or special conditions—conditions, however, which show reasonable likelihood of being eventually fulfilled by all schools. They should be different from the Practising Schools, as "*What is*" is different from "*What may be*." They should be to other teachers and to educational organizers what garden cities and model dairies are to municipal building committees and dairy farmers.

The conditions should be favourable in several respects :—

a. The staff should be specially chosen for their skill, their interest in forward educational movements, and their willingness to work in harness with the Training College. The teacher, however capable on his own lines, who lacks open-mindedness, is of no use for the purposes of the Demonstration School. Generally speaking, ability to work in harmony with others, and freedom from dogmatism in educational matters, are qualities which spring from a wide education, and the Demonstration School teacher, especially the head teacher, must be widely educated.

b. The equipment should be generous, though not excessive, representing a standard that might be applied to all schools when once the Demonstration School has shown that the outlay is educationally profitable.

c. There must be freedom from stereotyped inspection, tolerance given to new ventures and programmes, a sympathetic interpretation of failures.

To sum up—the Demonstration Schools should point out and illustrate what is practical of attainment, or, at any rate, practical of aim.

Now, in discussing the value of Demonstration Schools with several inspectors and local educational organizers, I have found that three objections are usually raised :—

1. It is said that the Demonstration Schools put fantastic and unrealizable notions into the heads of young and immature students, who try to carry out these ideas regardless of their own limitations or of existing conditions, come atilt against the school authorities, and from their inevitable failure emerge either soured and cynical or blighted and spiritless. These opponents begin with the obvious premise, "Most teachers are average." They go on, "Ambitious projects in the hands of average people often fail, *ergo*, Demonstration School ideals and methods worked out by average teachers involve disaster." They insist that the Training College Student must learn his limitations and circumstances, know when "this is too high, I (or my school) cannot attain unto it," and adapt his methods accordingly.

If our Training Colleges were filled with middle-aged men and women, this acquiescence in their own limitations and circumstances might be excusable, though surely, even in them, to be deplored. But for young people of 18 to 20 to know their limitations would be a national disaster ; mere utilitarian common sense and the cautiousness of middle-age are undesirable in them. It is of the essence of youth to be ambitious, venturesome, and idealistic. Besides, to mistrust Demonstration Schools because they set up ideals immediately unrealizable to the average teacher is to differentiate teaching from all other kinds of conduct. In intellectual and moral matters we believe in having standards difficult of attainment, we cling even to standards which no one has ever yet attained ; we prefer the person who aims high if only to fail : we definitely allow for the mishaps of the young and inexperienced and sympathetically help them to their feet. We despise the artist whose reach is the measure of his aim. We do not refuse to teach children about the saints and philanthropists and great men and women of the world because they may imitate them crudely and literally. A class of children is quick to discern when a teacher aims high ; they are sensitive to the atmosphere of the idealist.

The 2nd Objection is of a different kind. A Demonstration School must always have something to show for itself. The more successful it is, the more will it live in the public eye, the more will it be beset by visitors, and the more will it be called upon to display its wares. Consequently it will end by emphasizing and encouraging oral teaching (to show off its teachers), finished work of the over-supervised, teacher-trimmed kind (to show off its children). In short, it must have results.

Granting for the moment the truth of this objection, I would in the first place point out that it is one to which every better type of school is open, indeed the better the school becomes the more open it is ; and, in the second, that nothing encourages the display of striking and superficial results so much as certain kinds of inspection.

Also, I may surely add that no one is more aware of the futility of undue oral teaching or of certain kinds of patent and showy results than teachers with high standards, and, I think I may say, than the Training Colleges; and these are the people who will run the Demonstration Schools. They will think of process as well as result, and see that visitors are limited and stay long enough in the school to gauge its aims and methods as well as its results. They will consider the meaning of legitimate results. The undue prominence of oral teaching and results in the average elementary school of to-day has not been the work of Demonstration Schools, but of the iniquitous system of payment by results which existed in this country for so long.

3rd Objection. If *students* are always teaching in these schools the conditions are artificial; the pupils are made restless or are over-stimulated, discipline is difficult or is dependent on change and novelty. This objection, with its assumption that *students* will largely staff the school, opens up the important question of the place the Demonstration Schools should play in the college life. To my thinking students should teach little in the school, the ordinary two-year student not at all. The school should be used for :—

a. Purposes of observation by students, the set criticism lesson being largely abandoned in favour of visits to the Demonstration School, where the usual curriculum is followed and ordinary routine work is seen in progress.

b. The Demonstration Schools should realize and illustrate the Principles of Teaching taught in the College and thus provide a means of meeting the naturally arising criticism on the part of students and, still more, of Practising Schools, that College theories are "in the air."

c. The Demonstration Schools should be used by the College staff. It may well happen that a lecturer gets out of touch with children and, when called upon to give a lesson, feels stiff and rusty. Nothing centralizes the work and aim of the Training College so much as a school of this kind, where specialists meet and test the opinions they deliver in the lecture-room; nothing keeps the lecture work so real and living.

d. The Demonstration Schools should, as I hinted above, quicken the interests and ideals of the Practising Schools. A master or mistress of method can press for a change in the syllabus, &c., of the Practising School with much more weight and reasonableness when he is backed by the success in the Demonstration Schools of his proposed reform.

So much for the Demonstration Schools. What then must be the conditions essential to the success of such a school? I confine myself to three :—

1. The College should be given some real authority in the school, and the head teacher some real status in the College. Mutual consideration and courtesy will, of course, always be needed, but everything should not be left to *personal* relations. There should be some arrangement between local authority and Training College whereby the head and the responsible person on the College staff or governing body should be managers, and they should nominate the staff from *an absolutely unrestricted field.* It is evident that such an arrangement is more difficult to work out where Training College and school are owned and governed by different authorities; but exceptional circumstances naturally call for exceptional treatment.

2. The staff of the school should receive higher salaries than the staff in ordinary schools of the same type. This would both mark their skill and status, and induce competition for the posts. The extra payments might well be made from special treasury grants made to the Training College for the purpose. The school should be fully staffed by salaried certificated teachers, and each teacher should be capable of conducting the class in the presence of students.

3. The Training College should have an effective voice in the selection and appointment of the teachers in the Demonstration School, especially of the Head

Teacher, for it is the Training College that will have to work with the teachers and its theories, which should be reflected in the school.

It might seem that the present regulations of the Board have given us much of what we want, but we know how impossible it is for the individual Training College to fulfil these clauses unless the Board makes its demand first of the local authorities, and also, I may say, unless the Board shows some confidence in, and enthusiasm for, its own regulations.

Personally I do not believe any Training College is properly equipped, or even worthy of its name, without such a Demonstration School. It is for the lack of them that we are so often labelled. and indeed often are, mere theorists.

PROFESSOR FINDLAY, in continuing the discussion, expressed his general concurrence with the line taken by Professor Nunn and Miss Graveson, andth ought that Training Colleges generally were now so far in agreement as to the need for Demonstration Schools and the functions they had to discharge, that it would be possible to unite in definite measures to secure what was required. There was only one point in which he disagreed from Professor Nunn that was important enough to notice. He did not consider that the Demonstration School should be the only school in which a student should practice during his Training College career. They in Manchester had always held that a student should spend some time in what they must call "the ordinary Elementary School," i.e., he must get experience at first hand, in association with teachers following the regular course of public education. The Demonstration School, even if financed and controlled as a Public Elementary School, was by its very function set apart from the public system, and the more completely it fulfilled its function as a place for demonstration, the more necessary it became for the regular public schools to be resorted to for the other kind of experience.

The important point for the Association to tackle was the means of securing a Demonstration School effectively working under the control of the Training College. It must be borne in mind that the difficulty was largely the outcome of the Act of 1902, which placed the responsibility for the complete supply of public elementary education in the hands of the local authority. Probably the injury to Diocesan Training Colleges was not foreseen by those who framed this Act, but we ought not to forget that many of these Colleges, previous to 1902, had one or more schools under their control which fulfilled many of the functions now designed under the title, Demonstration Schools.

To seek a remedy we must look to both the Government and the local authorities. It may not be widely known that in 1906 the Government, on the motion of Mr. (now Sir) Arthur Haworth, accepted an addition to the Birrell Bill, empowering the Board of Education to avoid the difficulty created by the Act of 1902, by being enabled to spend money on behalf of Demonstration Schools associated with Training Colleges. Why this harmless clause was omitted by Mr. McKenna from his "unopposed" Act of the following year we had better not say.

But those incidents, followed up as they were by the insertion of the "Demonstration School" clause in the Regulations for Training Colleges, are a sufficient indication of the good intentions of the Board of Education. It should be added that the same inclination can be seen in the Regulations for the Training of Teachers in Secondary Schools, although in this instance the topic is relegated to a footnote. Our real difficulty, as the chairman has pointed out in his address, is with the local authorities. To secure what we want it will be necessary to convince them that the delegation of the control of the education of schools in a given area to the Training College in that area is a good thing. I think they can be convinced, just as the Board of Education has been convinced, but they must be approached, not as enemies to our work, but as powerful forces which we want as allies in our efforts for the improvement of future teachers.

Professor Findlay then proceeded to take up one or two current objections which local authorities raise to the claim of a Training College to have schools under its wing. He pointed out that this claim really rested upon the *nature of the business* assigned to the Training College Staff:—they were required to teach "theory," i.e., ideas relating to children's minds, and to the way children's minds worked in Arithmetic, Language, History, Handwork, &c., &c. Now theory remains merely as theory unless the person who expounds it shows what he means by demonstrating his theories at work in the daily continuous life of a school. We ask for Demonstration Schools simply because we are genuine practical people. If you abolish Training Colleges, or forbid us to teach "theory" in them, well and good; but if you insist on maintaining institutions where principles and practice of Education are to be learned, then you are unpractical in your organization if you refuse us the equipment necessary to make this study effective. This is the line of argument that, in Professor Findlay's view, could be presented with success to local Education Committees.

He concluded by suggesting resolutions to be adopted as a basis for action by the Executive Committee (see below):—

The following resolutions were brought forward by Professor Findlay:—

(1) That every type of Training College should be equipped with a Demonstration School of the general character indicated by the current Regulations of the Board of Education for the training of teachers for Elementary and Secondary Schools.

(2) That to realize the aim of the Regulations for Training Colleges relating to Demonstration Schools, the whole or the part of such Schools should be treated as part of the staff of the Training College, and as such should receive salaries and enjoy status adequate to the discharge of their special duties.

(3) That the additional cost hereby involved should be met by an additional grant through the Regulations for Training Colleges.

(4) That the Executive be requested to place these resolutions and the policy they embody before the Authorities concerned, viz., the Governing Bodies of Training Colleges, the Local Authorities, and the Board of Education.

The following resolutions on the same subject (sent forward from the Annual Meeting of the London Branch of the Association) were also read:—

(1) That it is highly desirable that every College should have a Demonstration School near enough to make communication easy.

(2) That the Committee of Managers of the School should include a large representation of the Training College Staff, especially those engaged in the professional training of the students.

(3) That the Staff, including the Head Teacher, should be selected on the express condition that they are willing to work in harmony with the methods of the College.

(4) That the Head Teachers of the School should be ex-officio members of the College Staff.

(5) That for the purposes of inspection by the Board of Education, the school should be considered an integral part of the Training College, and that arrangements should be made with the Local Authority to ensure that Inspectors responsible for the School should take into consideration the aims and methods of the Training College.

(6) That, subject to the usual financial limitations, the College should control the equipment of the School.

(7) That special remuneration should be given to all the Staff of the School.

On the motion of Preb. E. Hobson, it was decided to refer both sets of resolutions to the Committee.

(8) The following was proposed by Professor J. Adams, seconded by Professor J. J. Findlay, and carried unanimously:—

"That this Meeting resolve to recommend all members of the Association to register and to use their influence to get others to do so."

AFTERNOON SESSION.

(1) A discussion on "Physical Training in the Schools and Training Colleges" was opened by Rev. Canon Dennis and Miss Spalding.*

A large number spoke on the subject, and the following general resolution was passed:—

"That the subject of Physical Training and Hygiene be referred to the Committee, with the object of seeking an interview with the Board of Education and placing before them the views of the Association on the whole matter."

The following points were agreed to as embodying the views of the Association to be referred to the Committee in carrying out the general resolution above:—

(i) That for examination purposes and the awarding of distinction marks "Physical Training" should be separated from "Hygiene."

(ii) The ordinary course in Hygiene and Physical Training should be simplified and made more elastic.

(iii) "Hygiene" should be removed from its present position in the Syllabus and placed with the "Principles of Teaching," and that provision should be made for a more advanced course in Hygiene for those who desire it.

(iv) Students should be given the opportunity of teaching a class of boys or girls at the inspection in Physical Training; better still, the student should be seen at work in the School, teaching physical drill as part of the ordinary curriculum.

It was reported that the following resolution was passed at the meeting of the Council of Principals:—

"That the Council of Principals regret that apparently no attention has been paid to their recommendation that the ordinary course in Hygiene and Physical Training should be simplified and made more elastic."

The following resolution was, on the motion of Mr. T. Raymont, carried by 20 to 16:—

"That this Association, whilst recognizing that the present detailed uniform Syllabus of Physical Exercises may have served a useful preliminary purpose during the last few years, deems that the time has come for asking the Board of Education to cease to impose that syllabus and to accord to the Training Colleges the same freedom in this as in other departments of their work."

(2) The following was sent forward from the meeting of the Council of Principals held on the preceding day:—

"Resolved that the Training College Association be asked to refer Appendix A.II pp. 50 . . . Regulations for Training of Teachers to the Syllabus Committee of the Association for consideration."

It was decided to consent to this course.

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* A report of these papers will be found in the proceedings of the Conference, which are shortly to be published.

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SHOULD YOUNG CHILDREN BE TAUGHT ARITHMETICAL PROPORTION?

By W. H. WINCH.

PART II.

I. The Problem of the Experiment: Why we need Experiments of this kind.

I OWE some apology to the readers of the *Journal of Experimental Pedagogy* for the long interval that has elapsed between the publication of Part I and the present contribution—Part II—of this research. I am not assuming any general overwhelming desire on the part of my readers to pursue the matter further; but there has been, I know, in the minds of several competent critics, more than a little scepticism as to the general applicability of the results from the excellent Infants' School whose work I described last June. I expressly guarded myself on page 86 (Vol. II, No. 2) from asserting such general applicability. I said, "I am not inclined to assert that all Standard I classes will be equally successful; but they will be more successful than will be believed a priori by most of their teachers." I adhere to this, without any reduction or qualification of the statement. I further asked the probable sceptics to check my results by means of their own. As I am "pragmatist," both in educational method and educational research, I am prepared in all cases to bow to fact. Nay, more, I am prepared to urge that no inferential dicta as to educational organizations and methods can ever be more than suggestive. I believe this to be true for Psychology too, since every mental state, every mental function or group of functions, is, in a sense, a new product, and not merely a sum of elements, nor indeed merely a sum at all, however compounded. But however this may be in Psychology, in Experimental Pedagogy there is no doubt of it. So strongly is this felt to be trne, that some educational writers, even some modern writers, have despaired of Experimental Pedagogy altogether. A German educationist, in a critique on my *German Schools*, said that my suggestion that we should decide debateable educational questions by experiment in the schools themselves was quite worthless. Suppose we try to do what Herr Winch suggests, said he, in effect—he had evidently tried and failed, I think—we set our exercises with our boys—then we set them again a few days later, "*das Resultat ist ein anderes.*" By this he did not mean merely that there was general improvement—we know that fact very well now; indeed, it is bothering us a good deal with some of the Binet and other mental tests—he meant that the children take different places as compared with one another, seriously different places, on different occasions with the same test. It is quite certain, in the hands of untrained persons, that classes of school children will give most stimulatingly varied results from time to time, but no experienced teacher is misled. This variation is not intellectual variability in the strict psychological sense, it is a conative product of indiscipline; in the language of the teachers' room, "The boys are trying it on." Was there, then, no truth in the contention of the German educationist? Before answering definitely I ought to present his solution. It ran thus: Your experimental method is too shaky, your results are not steady enough; far better is it to rest upon the general principles of science—educational and other science—and infer what you want from them. Well, I am not against general principles—I once tried to write a little volume on Education,[1] whose principles were so general that many persons did not think the book had anything to do with Education at all, except in the title and the appendices—but there is always the logical difficulty as to how far the principles apply. And, of course, in such a question as that which I am now discussing, namely, at what age children shall begin to work sums in proportion, the general principles fail to give an answer, though theoretical considerations *did* suggest to me a method of experiment.

Now I will try to answer the German Educationist more definitely. I agree with him that we must get steady results—I disagree with him in his assertion that we *cannot* get them. That the results, as he implies, must be obtained under school conditions if they are to give practical direction to pedagogy is now, I believe, accepted. But there is a further difficulty, which my German critic did not emphasize. For, after we have thought out our method of experiment, after we have found that it works—that is, gives steady and reliable results in the hands of experts on a small scale—there is a third stage. Perhaps the argument will be clearer if supported by an analogy. All of us, however unacquainted with business, understand what is meant in the industrial world by the laboratory experiment, and by production on the small and large scales. For the affairs of the world, whether in industry or in pedagogy, it is the third stage which is the effective one. The preceding stages are interesting; but they are, I am pragmatist enough to believe, valuable more, if not only, for what they can contribute to stage three, than in and for themselves. If this be so, and my analogy is sound, educational experiment under school conditions is veritably forced upon us. And let us remember that teachers very variously educated and by no means all acquainted with the refinements of scientific method, any more than are their fellow *practiciens*, the medical doctors, have to carry out our conclusions, if ever we are to touch practical issues at all. So we must not require the use of complicated apparatus or a very subtle interpretation of our directions.

And there is one difficulty not found in manufacturing research and its applications which we pedagogical researchers meet at every step. One specimen of a particular chemical compound is like another, the stuff is true to sample, as we say. Well, our stuff is so often *not* true to sample that many experiments undertaken on individual children or on a few children under special conditions, for example, in schools specially taught and equipped, have misled us and are misleading us now, provoking among experienced teachers the conviction that the experimentalist is little better, if at all, than the old idealist in education who evolved his theory from what he thought the facts were, instead of trying to find out what they really are. We want the teachers with us; we shall not get them if we are irrelevant, or too subtle for daily use, or if our directions break down in the hands of the teachers who honestly try to carry them out. Let us hope that I am fully conscious, that is, *applicably* conscious, of the truth of these considerations myself. Shall, then, all seven-year-old children, and a fortiori older girls and boys in any and every sort of school, be set to learn arithmetical proportion, because of the results of my **First Series of Experiments** described last June? I think not; for, at the same time as these experiments were proceeding, others bearing on the same issue were going on through *all* the classes of a Junior Boys' School in the East End, throughout some of the classes of a fairly well-situated Girls' School in South-West London, and throughout *all* the classes of a "slum" School for Girls in the West End of London. These experiments correspond to the large-scale production in manufacture; the first series corresponded to production on the small scale, and the laboratory work was represented by the analyses of Stout and Keatinge given on pages 80 and 81 of the issue of last June. Did the first series justify the analyses? The answer was affirmative. Does the large scale work bear out the results of the first series? To a detailed consideration of the further experiments I now turn; we shall see to what extent they do, and to what extent they do not, as we proceed.

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[1] *Problems in Education*, Sonnenschein, now published by Geo. Allen.

II. The Second Series of Experiments.

i. GENERAL CONDITIONS OF THE SECOND SERIES.

A second series of experiments was carried on in a Junior School for Boys situated in the East End of London, and attended solely by children of Jewish aliens or persons recently naturalized. The school contained four standards and four standards only: it resembles the schools in America for the lower grades (now being superseded) called Primary Schools. The Standard I class corresponded quite fairly to the Standard I class in the South-East Infants' School; for there was no "standard" class in the infants' department of the East End School. This infants' school was thoroughly good in every way; but the "number-work" was not so marked a feature as it was in the infants' school in south-east London. The boys' school had for some time been under a pedagogical cloud, from which it was rapidly emerging, but no work in arithmetical proportion had been done. And it must be remembered that throughout the whole research, which lasted several months, no proportional work was done in any other lesson, and no kind of instruction was given in connexion with the exercises, except, of course, in so far as the arrangement of the exercises is in itself a form of teaching. The reader will remember that I adopted this plan to minimize the disturbing element of excellent (or otherwise) teaching. The children were Jews, popularly supposed to have special facility in arithmetic. All the tests were taken by the head master; who, with only four rooms in his school and only five teachers to supervise, found plenty of time for experimental work, in which, indeed, he was proficient, having had much experience as an assistant master and when in temporary charge of previous schools. I emphasize this consideration; since, without expert handling of the details, research in schools is more likely to be confusing than illuminating.

ii. THE TESTS, THE CHRONOLOGY OF THE EXPERIMENT, AND THE METHOD OF MARKING THE TESTS.

I must ask the reader to turn to the previous research for the tests, for in this school precisely the same sums were set, and set in the same way, as in the south-east Infants' School. The system of marking was also precisely the same. The series of exercises in this Jewish school began in the Standard I class, containing 59 boys, at 10.55 a.m. on Friday, January 3rd, 1913, and thence proceeded weekly until March 7th; in the Standard II class, containing 60 boys, they began at 10.35 a.m. on Friday, January 3rd, continuing weekly; in the Standard III class, containing 58 boys, at 10.5 a.m. on Friday, January 3rd, also continuing weekly, and in Standard IV class, containing 58 boys, on Thursday, January 2nd, at 11.30 a.m., and continued weekly, as in the classes previously cited.

In the 1st exercise, as before, the children were required to answer in writing "more" or "less" to complete proportion sums with easy numbers. In the 2nd exercise they answered "more" or "less" to sums proceeding only from or to unity. In the 3rd exercise they attempted to answer complete proportion sums numerically, and, as before, largely failed. In exercises 4 to 9 inclusive they answered numerically to half-proportion sums. In the fifth step complete proportion sums were set; and, helped by the experimenter's questions, the boys answered in two stages. This section of the serial exercises ran from No. 10 to No. 14. In the sixth and final step, embracing exercises 15 to 18 inclusive, complete proportion sums were answered numerically without any division into steps by the experimenter. This had been done once before, namely, in exercise 3, and the comparison of the final excercise with this one will give us a useful measure of improvement.

iii.—RESULTS FROM THE JUNIOR BOYS' SCHOOL.

Which classes or standards, if any, can work the sums successfully? To enable us to answer this question I shall give the results, class by class, and week by week. I shall, on this occasion, give in addition the correlation-coefficients between the results of the successive exercises, together with the "probable errors" of the differences between the successive averages. The correlation-coefficients have been worked out from the individual results by the Pearson formula in which $r = \frac{\Sigma\, xy}{n\sigma_1\sigma_2}$ and the "probable errors" from the usually accepted formula "p.e." $= \cdot 67 \sqrt{\frac{\sigma_1{}^2 + \sigma_2{}^2 - 2\, r\, \sigma_1\sigma_2}{n}}$

Table I.—*Showing the average number of correct answers for all classes, for each set of Problems.*

Standard.	No. of Boys.	Average Age on 31/12/12. Y. M.	First Step.	Second Step.	Third Step.	Fourth Step.						Fifth Step.						Final Step.			
			1st.	2nd.	3rd.	4th.	5th.	6th.	7th.	8th.	9th.		10th.	11th.	12th.	13th.	14th.	15th.	16th.	17th.	18th.
												a	4·1	4·1	3·4	4·5	4·0				
I.	59	7 5	7·5	8·2	3·9	5·6	5·5	6·0	5·7	5·9	5·9	...	...	...	...	...	...	4·0	4·1	4·5	4·8
												b	2·8	2·8	2·9	3·8	3·9				
												a	5·2	5·5	5·4	6·1	5·9				
II.	60	8 8	7·6	8·5	3·5	6·9	7·0	7·8	7·9	7·9	7·8	...	...	...	...	...	...	5·6	6·1	5·9	6·1
												b	3·4	3·8	4·6	5·3	5·2				
												a	7·4	7·4	7·3	7·6	7·7				
III.	58	9 9	8·5	9·0	6·3	7·9	8·2	8·6	8·8	8·6	8·9	...	...	...	...	...	...	7·4	7·7	6·9	8·0
												b	5·9	6·5	6·9	7·0	7·3				
												a	7·4	8·1	8·3	8·5	8·3				
IV.	58	10 11	8·6	9·3	7·3	8·7	8·9	9·2	9·3	9·5	9·6	...	...	...	...	...	...	8·3	8·3	7·6	8·3
												b	6·5	7·1	8·0	8·1	7·9				

Table II.—Showing the positive correlation-coefficients between the successive exercises, the differences between the averages of the successive exercises, and the "probable errors" of these differences.

Between Exercises.	STANDARD I.			STANDARD II.			STANDARD III.			STANDARD IV.		
	Correlation Coefficient.	Difference between Averages.	Probable Error of Difference.	Correlation Coefficient.	Difference between Averages.	Probable Error of Difference.	Correlation Coefficient.	Difference between Averages.	Probable Error of Difference.	Correlation Coefficient.	Difference between Averages.	Probable Error of Difference.
1 and 2 ...	·67	+ ·7	·14	·68	+ ·9	·12	·84	+ ·5	·08	·48	+ ·7	·10
2 ,, 3 ...	·41	−4·3	·21	·39	−5·0	·18	·55	−2·7	·17	·41	−2·0	·17
3 ,, 4 ...	·58	+1·7	·20	·34	+3·4	·22	·46	+1·6	·19	·55	+1·4	·15
4 ,, 5 ...	·74	− ·1	·17	·77	+ ·1	·14	·61	+ ·3	·14	·72	+ ·2	·09
5 ,, 6 ...	·79	+ ·5	·14	·63	+ ·8	·18	·68	+ ·4	·13	·79	+ ·3	·09
6 ,, 7 ...	·64	− ·3	·19	·76	+ ·1	·13	·77	+ ·2	·10	·56	+ ·1	·08
7 ,, 8 ...	·59	+ ·2	·21	·78	+ ·0	·13	·87	− ·2	·07	·52	+ ·2	·08
8 ,, 9 ...	·59	+ ·0	·20	·70	− ·1	·15	·71	+ ·3	·10	·43	+ ·1	·07
9 ,, 10a	·49	−1·8	·22	·59	−2·6	·19	·55	−1·5	·15	·19	−2·2	·19
10a ,, 10b	·74	−1·3	·15	·63	−1·8	·18	·75	−1·5	·16	·70	− ·9	·16
10b ,, 11a	·52	+1·3	·19	·51	+2·1	·19	·46	+1·5	·23	·62	+1·6	·16
11a ,, 11b	·70	−1·3	·15	·61	−1·7	·18	·81	− ·9	·14	·73	−1·0	·13
11b ,, 12a	·57	+ ·6	·18	·48	+1·6	·19	·65	+ ·8	·18	·57	+1·2	·17
12a ,, 12b	·72	− ·5	·15	·79	− ·8	·12	·86	− ·4	·11	·88	− ·3	·09
12b ,, 13a	·55	+1·6	·21	·60	+1·5	·17	·65	+ ·7	·17	·58	+ ·4	·16
13a ,, 13b	·76	− ·7	·17	·74	− ·8	·15	·85	− ·6	·10	·72	− ·4	·12
13b ,, 14a	·67	+ ·2	·19	·57	+ ·6	·19	·65	+ ·7	·17	·49	+ ·2	·16
14a ,, 14b	·84	− ·1	·12	·77	− ·7	·14	·96	− ·4	·05	·69	− ·4	·15
14b ,, 15...	·51	+ ·1	·20	·78	+ ·4	·14	·71	+ ·1	·17	·76	+ ·4	·13
15 ,, 16...	·59	+ ·1	·17	·63	+ ·5	·19	·75	+ ·3	·16	·50	+ ·0	·16
16 ,, 17...	·55	+ ·4	·18	·73	− ·2	·15	·65	− ·8	·17	·41	− ·7	·17
17 ,, 18...	·65	+ ·3	·15	·68	+ ·2	·16	·65	+1·1	·15	·52	+ ·7	·16

The figures on Tables I and II should be considered together, those of the second table furnishing measures of the degree of statistical confidence which we may legitimately place in the averages of Table I in their relation to each other. I have worked out the correlation-coefficients for two reasons; firstly, to show the degree of correspondence between the results of successive exercises, and secondly, because the correlation-coefficient or "r" is required in the formula for the "probable error" of the differences between the successive means or averages. Let me illustrate by reference to some of the figures for Standard I in Table II. Between the first and second exercises (the two tests in which the words "more" or "less" were the required answers) the correspondence is + ·67. There is a difference of + ·7 between the second average and the first. Is this, so to speak, mere "chance," or is it a "general" rise, a rise in which we may have statistical confidence? In order to be sure of this, we must consider the "probable error" of the difference between the averages in relation to the size of this difference. If the difference is two or three times its probable error the difference is regarded as a general one, something that we can swear by, outside the domain of mere chance. The difference in this case is ·7, five times its probable error which (see next column) is ·14. We are entitled, therefore, to say that a common factor is raising the average from the first to the second exercise. What the common factor is, statistics will not tell us, they merely guarantee its existence. It is too large for a mere practice effect, and teachers would at once explain it by the fall in difficulty from exercise 1 to 2, though some of it is most likely an effect of practice only. In exercise 3 we require numerical answers to complete proportion sums, a very different exercise. Down goes the correlation-coefficient, a fall which is some indication that the test is not of corresponding difficulty to the same children as exercise 2, and the fall in the average is enormous, namely 4·3, twenty times its "probable error." In exercise 4 (the first of the numerical half-proportion sums) the average rises; it is a valid rise, since the increase is 8 times its "probable error." From exercise 4 to 5 there is a fall, but not a *general* fall, for the difference is ·1, less than its own "probable error." From 5 to 6 there is an appreciable rise, with a difference 5 times its "probable error"; from 6 to 7 a fall, but not statistically guaranteed to be due to any common factor, since the fall is less than twice its own "probable error." From 7 to 8 a rise which may be due to chance (the increase and its "probable error" are approximately equal). The results for 8 and 9 are the same in average though the children have changed places a good deal, as shown in the correlation-coefficient.

The outstanding feature of these exercises in the Fourth Step is the small and doubtful improvement which they show: only once has the improvement from one exercise to the next been general (in the statistical sense), though the "falls" have in neither case been general. There are two points of interest arising from this: the first practical, the second theoretical. Practically it hardly seems worth while to attempt this work with this class, since the rise is so fluctuating and small. The second point is of theoretical interest. Is there a general rise at all from exercise 4 to exercise 9? If there is, *a very important issue in experimental method is emphasized, namely, that one or two tests, even at proper intervals, are insufficient to detect general improvability, even when it exists.* I will return to this question later on. At 10 a, our exercises increase in difficulty; the correlation goes down a little, but the fall in the average mark is big and general. Between 10 a and 10 b, the two parts of the same sums, up goes the correlation, and there is a *general* fall in the results; for the Second Step in the sum can, generally speaking, only be worked right by those who have got the First Step right, and, of course, not by all of those. It is a big fall, eight times its probable error. From 10 b to 11 a, there is a fall in correlation, a general rise in result. Then the figures move up and down, rising and falling regularly in correlation-coefficient from the "a" exercises to the "b" exercises of the same sums, and from the "b" exercises to the "a" exercises of the next set, with valid differences all along beteen the averages until we come to 13 b, when regular improvement seems to end. Nor can we say, merely from the successive tests considered one by one, that there is any further rise at all, for even in tests 17 and 18 the rise is less than three times its probable error. We are now at the end of our series for Standard I, and we can measure the progress from exercise 3 to exercise 18, since they were similar in principles and equal in difficulty. The average rises from 3·9 to 4·8. Practically, this does not seem sufficient to justify us in doing the work with this class. But on the theoretical question which I raised above, the result is important. The correlation-coefficient between the results of exercise 3 and exercise 18 is + ·55, and the increase in average mark is ·9 with a probable error of ·19. Thus, the rise is a general one, statistically valid, five times its probable error. *Considered merely as a succession of exercises in their relation to each other, the improvement might have been considered doubtful, yet it is undoubtedly there. The contention of teachers that psychological experiment in schools must be continuous and of considerable duration before pedagogical value is attached to its results receives confirmation.*

Now, more briefly, let me direct attention to the results for Standard II, considering, as before, the successive averages in Table I, together with the statistical checks afforded by Table II. We may note, as in the previous standard, the fall in the correlation-coefficients when the problems change in character, that is to say at the commencement of each "step" in the series of exercises. Thus, for exercises 1 and 2 the coefficient is low; as it also is for 2 and 3, and for 3 and 4; similarly, from 9 to 10 a it falls, for though the "a" parts of the Fifth Step are like the problems of the Fourth Step, the problem is complicated by a second or "b" part, and is, therefore, more difficult in consequence of its more involved setting. There is the invariable fall in the coefficients from the "b" parts of the one set of problems to the "a" parts of the succeeding set. On entering into and proceeding through the last stage, the coefficients are consistently higher than those of Standard I. Again, very briefly, consider the successive averages with a view to determining how far the rise or fall in the averages are statistically significant. The difference between the averages, may I repeat, should be two or three times (at least) as great as its probable error. The rise is definite from 1 to 2; the fall is very great from 2 to 3 with, as before, a big rise from 3 to 4. There is a more consistent rise in this class throughout the Fourth Step than was to be found in Standard I, though the rises are not "significant," when considered one by one, except that from 5 to 6; and the fall from 8 to 9 is less than its probable error. Once again, we see the advisability of taking a number of exercises before asserting improvability or non-improvability for a particular mental function, since there is no doubt at all that there is general improvement from the beginning to the end of the "step," though the *successive* averages (except in one case) do not statistically justify us in asserting it. All the differences between the remaining averages are significant until we come to those between 16 and 17, and 17 and 18. These boys, temporarily at least, seem on the limits of their improvability; the averages begin to waver up and down about the limits of their probable errors. There is, as in the previous standard, no doubt whatever about the general improvement from exercise 3 to exercise 18. The difference in average is 2·6, the correlation-coefficient is ·16, and the probable error of the difference is ·25. It certainly appears that this class has, generally speaking, improved sufficiently to make the "teaching" worth while; but I will submit a further analysis later, in which it will be seen that some of the pupils of this class show little advance.

The figures for Standard III call for little comment. The correlation-coefficients rise and fall in similar ways to those of the preceding standard. Nearly all the successive differences are statistically significant; and, unlike the Standard I and Standard II boys, these pupils show continuous advance, with but one backsliding, throughout the Fourth Step. There is one average which is hard to explain, namely, that for the 17th exercise. There is a serious and valid fall. There is a fall for Standard II also, but only a doubtful one; whereas the variation in Standard III is 5 times the probable error of its difference from the average of the 16th exercise. How shall we explain it? Probably, by some distraction of attention during the exercise, but no such distraction is actually known either to the Head Master or myself. Such a change in the results is very perplexing, and remaining unexplained, sets us the task of discovery; which, indeed, is the service that accurate statistical treatment really lends to pedagogical research. The rise from the 3rd to the 18th or final exercise is very considerable, it is 10 times its probable error; and it appears, both from the initial result and from the steady and considerable improvement throughout the exercise, that problems in proportion might well be dealt with in this class.

The figures for Standard IV also call for little comment. It is quite obvious from the success with which these boys worked the 3rd exercise, which gives, as it were, an initial position for their work in complete proportion sums, worked numerically, that Standard IV is a class which may well be taught proportion, though it cannot be denied that these boys are distinctly old for their class. The marks should be compared exercise by exercise with those of the lower classes. There is the usual "significant" drop in exercise 3, and the usual rise in exercise 4. During the exercises of the Fourth Step there is no "set-back," even temporarily. There is steady advance; though of the successive exercises the difference between the averages is not always two or three times its "probable error." Again we see the need for a series of exercises before we venture to assert non-improvability. There is a fall of quite unusual magnitude in the correlation-coefficient from the last exercise of the Fifth Step. It seems, unexpectedly to me, I must confess, that greater disturbance is produced among the older than among the younger boys by a change in the character of the exercise. I could understand it if the Standard IV boys had been specially and lengthily practised in sums of the kind used in the Fourth Step, but this had not been the case. The coefficients rise and fall like those of the lower classes with differences between the successive averages (in all cases but two) at least 3 times their "probable errors." There is a considerable fall in exercise 17, a decidedly significant fall, corresponding to the decline in Standard III. Distraction of attention, which I suggested as a likely cause in Standard III, would hardly have been likely to operate in Standard IV also, a separate class, working at a separate time. There is a slight fall also in Standard II at this point. The most probable explanation is the existence of some subtle increase in the difficulty of the 17th set of problems; but I cannot say that there is any obvious difference. From exercise 3 to exercise 18 there is a rise of 1·0 in the average mark, the correlation-coefficient of the two exercises is ·74 and the "probable error" of the difference is ·13, namely, about $\frac{1}{8}$th of that difference.

On the basis of the figures showing the improvement in the respective classes in the various standards I have concluded that the boys of Standard I, as a class, cannot profitably commence "proportion," and that, in the case of Standard II, it is very doubtful; but that proportion sums, at least mentally, with small numbers, can be profitably dealt with in Standards III and IV. Let me now show in detail the final achievements for the individual boys of the various classes, and attempt to reach my conclusions in another way.

Table III, showing the sums per boy worked correctly in all classes for the Final Test, exercise 18.

No. of Sums right.	No. of boys obtaining these marks in Standards			
	I	II	III	IV
10	0	5	15	19
9	3	1	12	7
8	6	13	8	11
7	8	6	7	7
6	6	9	7	7
5	5	5	2	1
4	11	5	3	1
3	5	5	1	
2	6	3		
1	5	2		
0	1	0		

Several boys had left the school during the progress of the experiment, so that the numbers are rather smaller than those with which we started. We have now 56 in Standard I, 54 in II, 55 in III, and 53 in IV. I have drawn a thick line between those who got more than five sums (half the possible number) right, as I do not consider that the boys below this line can reasonably be said to have justified the expenditure of time involved. As classes, Standards III and IV are obviously fit to do the work; but, as classes, Standards I and II are unsuitable. There are some capable boys arithmetically in Standard I, but not enough to justify proportion as class-work, whilst in II there is evidently an upper section which *can* undertake it, provided it can be taught separately.

iv. THE RESULTS FROM THE FIRST AND SECOND SCHOOLS COMPARED.

The reader is asked to turn to page 86 of the June number of 1913 for the results from the Infants' School in which the research began. From exercise 3 to exercise 18 the children rose from an average of 4·1 to an average of 7·5. In the present school the corresponding figures are 3·9 and 4·8. There was no teaching in the ordinary sense, be it remembered, in either case, throughout the experiment. In the results of exercises 1 and 2, which are also indications of initial ability, like those of exercise 3, the results were almost identical. The Standard I in the Infants' School scored 7·8 and 8·3; the Standard I in the Boys' School scored 7·5 and 8·2, and the ages of the children were identical, namely 7 years 5 months in December, 1912. Both classes were handled throughout the experiment by Head Teachers of first-rate capacity. Under these equal conditions, with this apparently approximately equal initial endowment, I have concluded that the one class ought to undertake the work and the other ought not. Why do I thus conclude? Briefly, on the ground of improvability; for, with approximately equal initial endowments, one class shows great improvability and the other very little.[1] *It is evident that our pedagogical*

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[1] The Standard I class in the Infants' School worked the exercises *twice* weekly; the Standard I in the Boys' School worked them *once* a week, spread over a longer period. I should not like to assert that this difference was without effect.

questions cannot be decided merely by measures of initial endowment: mental tests must be given at intervals and their results compared unless we are to be misled. Initial endowment without improvability is a dangerous measure on which to classify.

So much for the pedagogical problem, what can we say as to the psychological one? Why does one class improve so much, another so little? The children of the Infants' School are English, the children of the Boys' School are the children of Jewish aliens. Is this racial difference a considerable factor? I do not know; but, from present knowledge, I do not think so. This Infants' School is slightly superior in social class to the Boys' School. This is definitely a factor in favour of the infants. The previous training of the infants in "number" is more considerable than that of the boys. Is this a factor? I think so. But if it is, how do we explain the approximately equal start in proportion? Perhaps on the ground of some arithmetical influence which transfers slowly from what they have been previously taught to what they are now learning. But this is suggestion merely, and needs proof by my *method of equal and correlated groups*, if it is to be seriously advanced. There is nothing new to say as to the Cost in Teaching Power; as to the Cost in School Time, except that the exercises take less time as the children get older; as to the Cost in Fatigue; or as to the Method favoured by the results of the Experiment.

I shall deal with experiments on proportion conducted in two other schools in a third and concluding paper.

(*End of the Second Series of Experiments.*)

CHILDREN'S HUMOUR.

By I. LAWRENCE, M.A.

To one whose work consists to a great extent in observing the teaching of others there comes a continuous and increasing realization of a certain rigidity and conventionality in the treatment of subject matter on the part of even well-intentioned and intelligent teachers. The frost of artificiality is too frequently present in the atmosphere of the schoolroom, with the result that some of the natural capacities and tendencies of the growing human being have little chance of development and expression.

We cannot, therefore, be surprised at Mr. Rusk's summing up of the results of some experimental work with school children. "A study of children's imagery," he writes, "will help to chasten the teacher's opinion as to the importance of the school in education. . . . It cannot but be admitted that the investigation of the children's imagery proved that practically all the imagery with which children ordinarily do their thinking has been acquired elsewhere than at school."

The limitations of the schoolroom are in a sense inevitable, its four walls restrict those within them, but the teacher tends to accept his restrictions too passively, and to allow them to extend unnecessarily.

The writer well remembers the rebuke administered by a clever and sympathetic teacher, because the former found the scenes in "The Tempest," between Stephano, Trinculo, and Caliban so exquisitely funny. That Skakespeare should arouse hearty laughter in his readers seemed somehow not quite the thing.

The child's strong sense of the ludicrous is a human attribute to which we attach little value in teaching. Yet in such a subject as literature the encouragement of æsthetic appreciation is hardly more vital than an encouragement to appreciate the hearty fun and easy wit of our great writers, yet this aspect of literary taste is too often neglected or ignored. It is not claimed that children in their school years are capable as a rule of understanding the most intellectual kind of humour, and it would be a preposterous task for the teacher to endeavour to force that understanding; he would but call up the smile of acquiescence and weariness in place of that of spontaneous enjoyment.

But humour can, like other human qualities, be cultivated, and be given opportunities for expansion and expression.

What normal child does not bubble with mirth over "Alice in Wonderland," and is it such a far cry for that same child, a little later, to laugh with and at Charles Lamb?

If we older people would trust our memories we could not fail to know that as children many events and situations struck us as excessively funny, and that the joy of life we sometimes miss as we grow older was in part due to that childish but very real sense of fun. Man is a laughing animal. Most teachers, however, would have to confess that they do not do justice to their pupils' perception of the iucongruities of life, that they do not give fair scope to the spontaneous expression of that perception, and with regret they might come to realize that not only do they inhibit unnecessarily the hearty love of what is funny in their children, but in that process they materially subtract from their own gaiety, and lose many a moment of quiet fun.

Two great moderns, Bergsen and Meredith, assign to the spirit of the Comic a regulative and strongly intellectual function. The education of his children's capacity for laughter seems, then, a particularly appropriate task for the teacher, and in literature he finds a ready and most efficient instrument to his hand. He should not confine himself to literature, for in educating his pupils' appreciation of comedy the teacher would not aim at leading his children to find their fun, any more than their knowledge, chiefly in books. He would use literature as a means of cultivating an attitude towards life. Meredith has taught us to laugh at the follies, and sometimes the evil, of mankind. The teacher also may bring his children to realize that they should not only take life seriously, but at times laugh at it.

The writer collected some 200 papers from several types of schools with the aim of discovering what children laughed at, and how this varied according to age and circumstances. The children wrote an account of the funniest thing that they had heard, read, or directly experienced, as unprepared compositions for their teachers.

The enquiry was too slight to permit any certain conclusions to be drawn, but the results were interesting and instructive in the differences indicated by the papers between the older and younger scholars, and between those of different schools. These differenccs made it necessary to deal with the papers in three groups.

Group I. The seventy papers belonging to this group are written by very poor children, ranging from ten to thirteen years of age, in an elementary school.

Group II. These children, from whom I had seventy-seven papers, are the same age, and come from a higher elementary and a secondary municipal school. The type of child in these two schools is much the same. They come from comfortable homes, and their circumstances and environment are very similar.

Group III. The children of this group, aged from fourteen to seventeen years, attend an excellent secondary school. Their home circumstances are those of the upper middle class.

GROUP I.

This group alone included boys and girls, the children of the other groups were all girls.

Though differences characteristic of sex were expected to emerge, none declared themselves in these papers.

The boys and girls of the poorest class find their fun in the street and the Picture House.

Street experiences, 53%.

Picture Palace experiences, 30%.

The Picture Palace humour is of the usual kind—a continuous chapter of accidents.

In the street, clowns, nigger minstrels, performing animals, chiefly monkeys, &c., arouse the children's mirth. The grotesque is an almost universal source of laughter, and novelty is in itself funny to the children. "It was the first time I saw an elephant, so I laughed," is one child's clear expression of a general characteristic.

Four only relate something read, and the subject matter of the reading is poor.

Five children show a purely individual and original sense of fun. They select really homorous personal incidents, of which the following is a type.

"WHY I LAUGHED."

"The funniest thing I ever saw was at my auntie's marriage. We played at musical chairs. My uncle had to shout, 'Police!' over the window three times. He did not like it, but he did it; it made me laugh."

GROUP II.

A great similarity marks these papers; 83% of the children relate funny anecdotes. The stories quoted as funny are trivial in the extreme—they are all more or less familiar, of the would-be humorous type; some are amusing. But it is noticeable that these poor jokes, read in books or magazines, are treasured in the children's memories, yet not a child quotes scenes from Dickens or Lewis Carroll, or other masters of fun that are certainly not beyond their capacity to understand.

The papers show, however, that these young people can see the point of a story and express it as effectively as their elders. Three children describe personal episodes, one description declares the humorist and the storyteller.

The most interesting document is from an eleven year old girl, who has mistaken the sense of the term funny, though this was explained to the children. But her metaphysical queries are so striking, and throw so vivid a light on the difficulties that present themselves to an acute child mind, that I feel impelled to quote the little philosopher.

"I think the funniest thing is that I was taught that GOD is everywhere, for if He was everywhere He would be fat and thin and long and wide for if He was in this room He would be parted from the next room and this has always been a puzzle to me which I cannot understand."

GROUP III.

These papers are markedly individual. The adolescent girl expresses her developing realization of self in what amuses her.

52% of the papers describe experiences in which the author was an active agent. Of the remaining papers all express more or less intimate episodes told by relatives and friends; these stories seem to have lived with the children and become their own. Compared with the other groups, Group III includes children whose experience is infinitely wider, fuller and more varied, yet Group III from a wide field selects events and situations nearer at hand than do the other groups.

As to the contents of the papers, the girls tell stories of school girl pranks, ragging, undergraduate difficulties. The following is typical of the younger girls:—

"One of the girls was aiming a cardboard box at another girl's head, and she ducked, and quite by accident it hit Miss ——— in the face when she was reading the paper."

Most of the papers are too long for quotation. Their most noticeable feature is their spontaneity and individuality. The laugh at authority is very present; the girl who laughs at this stage is a critic. The humour of incongruity, of the contrast between appearance and reality, is a definitely recognized source of mirth.

On the whole, comparing group with group, the less sheltered child has the most primitive sense of humour, the novel and grotesque excite his laughter, but he seems more original and spontaneous than the children of Group II, he relates his own experiences as a rule. In his case the influence of the Picture House with its poor fun and worse taste is to be regretted.

The better-off child of Group II is much more conventional. These children find their fun in a feeble type of literature. They know a story is funny and tell it quite well. But the reader has an uneasy feeling that these children do not have fun enough, that certainly their power of appreciating humour in literature has not been cultivated, and that they are not sufficiently ready to find occasions for laughter in everyday life.

There is a complete lack of conventionality in the papers of Group III. The humour of the older girl expresses her personality, and her sense of fun is becoming critical and intellectual. Her laughter, like that of all true humorists, is awakened by the common happenings of life.

AN ELIZABETHAN SCHOOLMASTER.

By GERALDINE E. HODGSON, Litt.D.

(A Paper read to the Sheffield Branch of the Teachers' Guild at the University of Sheffield, Jan. 24th, 1914.)

People talk glibly sometimes about reconstructing the Past; but if some of those who belonged to it could stray into the midst of our best efforts, they might feel singularly homesick. Yet, futile as the attempt may be, it must be made, if one would at all appreciate such a man as Richard Mulcaster. Born in the 21st year of the reign of Henry VIII, he was 17 when that monarch died: he lived on through the reigns of Edward VI, Mary, and Elizabeth, and died in the eighth year of James I, a witness of great changes and strange developments. When, by his foreign policy and personal extravagance, Henry VIII had contrived to dissipate the treasure which his father had amassed, and when taxation had failed to supply his real or supposed needs, his confiscation of the lands of the monasteries, and of the gild lands outside London, had economic and educational consequences which, perhaps, he neither intended nor foresaw. The new lay-holders of the old Church lands proved, as we all know now, more grasping landlords than the religious whom they superseded; and also they abandoned, as a general rule, the monastic custom of providing education for those of the poor with an aptitude for learning.

Moreover, the confiscation of the gild lands injured the poor, the revenues being no longer available for loans without interest to indigent workmen, for the apprenticing of boys, the pensioning of widows, and the relief of invalided or out of work artisans. It is surely no exaggeration to say that the net results of Henry's changes were, on the whole, the further impoverishment of the poor, and the increasing enrichment of the land-owning and merchant classes. Edward VI and Queen Mary seemed powerless to check the burden of poverty in England. At last the capacity of Elizabeth came to the nation's rescue. Foreign wars, daring exploration, the growth of foreign commerce, the spirit of Renaissance learning—which really penetrated the English mind in the sixteenth century—all these, by leading to a less insular general outlook, buttressed the changes for the better which Elizabeth achieved. But there was one legacy, *damnosa hereditas*, from her father, with which she was forced to cope directly—*the problem of the poor.* The Queen's political sagacity established peace, landowners flourished, merchants prospered; but the lot of the artisans and labourers was too often precarious and even miserable. We ought not to exaggerate. Begging did not originate in Elizabeth's reign: there had always, so far as men's memories reached, been indigent persons; but now there were, and people realized that there were, *poor who belonged to no one*, in the sense that they were no one's special responsibility. When the feudal system began to break up, and people began to exist with no lawful settled place in the body politic, the religious houses had stepped in with a fairly adequate if informal system of relief. But Henry's dissolution of the monasteries had done away with all that. Elizabeth was the first English monarch who deliberately faced the problem of establishing a regular state system of poor relief. The economic condition of Elizabethan England was the germ whence sprang our unsatisfactory modern social arrangements, though the Queen was not responsible; for it may be conceded that, whatever were her shortcomings, she did, in her own haughty fashion, care genuinely for her people; further, her interests governed her thoughts, and practical action followed. Elizabeth was no idle dreamer.

Mulcaster's life as a schoolmaster almost coincided with Elizabeth's reign. It is an interesting speculation whether this far and deep-sighted writer on educational problems, which he so often treated on economic lines, contributed directly to the debatings and schemes which issued, two years before the Queen's death, in the First English Poor Law, a Law which, whatever its aims, took over very nearly the relief and apprenticeship work which formerly had fallen so largely to the gilds.

We can hardly doubt that though Mulcaster, who might with justice be called the Father of English Economics, took deep interest in Elizabeth's social legislation, yet he must have been even more engrossed by the literary condition of England, when, in 1561, he became first Head Master of Merchant Taylors School; for the vernacular literature has a close bearing on education, or something is very wrong with both.

The words "Elizabethan literature" are almost aureoled, so that many of us are apt to forget that the Queen had ruled for 21 years before Spenser, who was Mulcaster's pupil at Merchant Taylors, gave his countrymen *The Shephearde's Calendar.* As we reflect on the actual facts, it seems that the pedagogue, who admonished the nation on the unique value to a country of its vernacular, must have been rather in straits when he looked round for suitable books in English prose, for this form or that. English boys may have been more avid readers of Sermons then than now; if so, Latimer's vigorous discourses might have served, but I doubt if they were. One book of conspicuous power had been written in nervous English, in a style more attractive possibly to Elizabethans than, say, the works of Richard Rolle, or Mother Julian of Norwich, viz., Sir Thomas Elyot's *Boke of the Governour;* but even it was hardly a volume to attract boys. Ascham's *Scolemaster*, not in print till Mulcaster had been nine years a Head Master, was not likely to be much more pleasing to them. True, there was the *Utopia* in the English dress Ralph Robinson gave it in 1551. If we turn from prose to the drama, metal more attractive to children, what were the possibilities? Few enough for the first twenty-five years of the school's existence. The two London playhouses—The Curtain and The Theatre—were not built till 1576, Blackfriars in 1596, and the Globe in 1599. Though Udall, Head Master of Eton, known as the greatest beater of his time, whimsically enough produced the first English comedy, *Ralph Roister Doister*, in 1541, that was but one. English Tragedy lingered till the not very enthralling *Gorboduc* appeared in 1561. One might say that from 1561 to 1580 the drama in England lived a semi-amateur life of experiment in schools, in the Universities, in the Inns of Court, until Marlowe and his contemporaries took violent possession of the Stage, and wrought its possibilities into that which became in Shakespeare's hands the Elizabethan Drama. By that moment, the best work of Mulcaster's pedagogic life was finished.

If we turn next to England's professional resources for education, and among these look to the schools rather than to the two Universities, it is still less easy to describe briefly Elizabethan opportunities. Speaking comparatively, they were not small.

There remain, in this country, a few schools of venerablest antiquity. Probably the oldest of them is the King's School, Canterbury, though its connexion with S. Augustine is sheer hypothesis; Bede himself mentions no school or school work in England till he reaches the year 681, and then we only infer the previous existence of the famous Kentish School, because he observes that Sigebert, King of the East Angles, "desiring to imitate what he had seen done well in Gaul, set up a Grammar School in which boys should be taught well in letters, with the help of Bishop Felix whom he had got from Kent, who obtained ushers and masters after the fashion of Canterbury."

Then there is Carlisle Grammar School, founded in 686 by S. Cuthbert, and said to have been re-established by William Rufus, of whom most of us think less as an educational light than as a deer-hunting king, straying about the New Forest in that remote spot where still the wild scarlet gladioli grow, and getting himself shot for his pains. There are S. Peter's, York, founded in the eighth century, rememberable always because it was Alcuin's School; and the Grammar School at Derby, with its reputed Saxon origin. Then, again, there is the King's School, Warwick, unique because, if younger than Canterbury and some others, yet it stands alone in being able to show its documentary evidence of existence continuously to to-day from the day when, in the quaint phrase of Domesday Book, Edward the Confessor "was alive and dead." There is, too, Bedford Grammar School, which can prove that it was founded before 1120.

Perhaps, too, we forget how many of "the great Public Schools" existed before Mulcaster went to Merchant Taylors—Winchester, Eton, S. Paul's, Christ's Hospital, Shrewsbury, Repton, and Westminster, the original Grammar School of the Collegiate Church of S. Peter, Westminster, which was refounded in 1560. Three others, still in being, were established later in Elizabeth's reign—Rugby, Harrow, and Uppingham. To these, in addition to those already mentioned, must be added several still existing Grammar Schools—Lancaster, Worcester Royal, Stratford-on-Avon, Manchester, Bristol, Leeds, and Tonbridge. There were, also, several celebrated London Schools—S. Martin le Grand, S. Mary le Bow, S. Dunstan's in the East, and, most famous of them all, S. Anthony's; S. Andrew's, Holborn; All Hallows the Great; S. Peter's, Cornhill; and S. Thomas Acre's. The Mercers Company founded their school thirty-nine years before the Merchant Taylors bethought themselves of theirs; and finally, S. Saviour's, Southwark, was Queen Elizabeth's creation. In his *English Schools at the Reformation*, Mr. Leach gives a chronological list of schools—the dates of their foundation ranging from 1066 to 1548—which were mentioned in the *Chantry Certificates*, and *Continuance* or *Refoundation Warrants*, which were issued by Henry VIII's Chantries Commission. That list contains 204: they cover the country from Kent to Cumberland, from Cornwall to Northumberland; about twenty-five of them have been already mentioned here as Public or Grammar Schools.

This, then, is a brief summary of the secondary school provision in England when Mulcaster, leaving his private teaching in London, accepted the headship of Merchant Taylors.

The sanitary arrangements of the schools seem to have been simple to primitiveness; for instance, at Eton, the boys, when they had dressed and tidied up their dormitories, went, in two long lines, to the pump to wash. Small wonder that Eton allotted to one of the eighteen præpostors the unpleasant duty of looking after "those who do not wash their face and hands, and who are otherwise dirty in their habits." What great desire could an English boy entertain to wash, as he stood, on a cold winter morning, shivering for his turn, or what shining opportunity, all his clothes being securely on? Saffron Walden

Grammar School found it necessary to have *Prepositores* in the plural, "for yll kepte hedys, unwashed facys, fowle clothis and sich other."

Of manners and morals, John Colet's "precepts," hung up to public view in "Paule's Scole," may serve as a simple instance—"Revere thy elders; Obey thy superiors; Be a fellow to thine equals; Be benign and loving to thine inferiors; Be always well occupied; Lose no time; Wash clean; Be no sluggard; Learn diligently; Teach what thou hast learned lovingly." The delightful volume, *Meals and Manners*, published by the Early English Text Society, is a mine of information about points of manners and accomplishments; but it relates to the century before Mulcaster, that vivid poem, *The Birched Schoolboy*, being about the latest in date—1500.

Into the seed-time of the Elizabethan dawn, Mulcaster suddenly flung his vigorous personality, his strikingly original ideas. My aim, however, is not solely, or even mainly, to recall him and his views to a forgetful generation: my object is ulterior and wider. I desire, if I can, to indicate two facts: first, that our modern problems and panaceas are not so new as we sometimes think them; and, secondly, that an eclectic study of past writers on education may have "a vital and formative use" for us to-day. I do not, for one moment, wish to suggest that the fact that a man has written a book obliges us to read it, or even to know that he wrote it; but I do very much wish to urge that we constantly suffer loss by neglecting some old author who has in his pages precisely what we want, if we only would look for it. Seldom, perhaps, is this truer than in Mulcaster's case. I have no intention of dragging you all through an analysis of his lengthy book, *The Positions:* I would rather fix attention on certain salient points on which he laid much stress, in which he was, perhaps, conspicuously original in his day, and which still concern us closely now.

The first point, then, shall be his handling of class distinctions. There are people who affect to think it vulgar to mention such matters. But, as Bishop Butler drily observed, "Things are what they are, and the consequences will be what they will be." Scientific enquiries about education should begin with facts, however much they may stray later into idealism. No one of us in England really believes in equality: it is easy to prove that unpalatable truth, for he who is most convinced he has no superiors is still not unaware of inferiors. So the myth of equality is easily disposed of. That does not affect the other proposition that Democracy should involve equality of opportunity. But we might still fairly ask for some elaboration of that demand. What does Democracy want? Does it aim at rendering everyone exactly like everyone else, or should it aim at making every man his own best? There is a world of difference between the two. Public opinion, it is hardly too much to say, is muddled on the point.

The lament is occasionally heard that the threadbare coat of the underpaid clerk should be preferred by so many to the possibly grubby but more truly prosperous apron of the skilled artisan. That phenomenon will probably continue to occur in a country like ours where a "Public School" will refuse the son of a retail jeweller, while it accepts the son of the said retail jeweller's clerk, on the ground that one is a tradesman and the other a professional man, a story not apocryphal, but only too characteristic of the average Englishman, who, as Dr. Creighton severely observed, is not only without ideas, but hates an idea when he sees one. Nothing, I suppose, can deliver us from the tyranny of the professional coat but some uncompromising student of, and builder with, things as they are, not superficially but fundamentally, some observant architect like Richard Mulcaster. He is so sadly wanted in this twentieth century. In the latter days of June, 1913, the *Morning Post*, which is notable among the London dailies for the protection it extends to educational matters, published an article which made one sigh for an hour of Mulcaster's sanity. The article opened with this announcement—" A new power is springing up in England, a power that makes for the nation's well-being. There is growing up a race of teachers."

Perhaps it is rather blunt to ask the question, but would it not be nearer the truth to say that the most noticeable new growth among us is a shocking conceit of ourselves, of our partially-apprehended problems, and of our half-thought-out panaceas? We have not only, and in a wholesale fashion, neglected the manifold wisdom of the past; but when we chance to think of a method, suggested centuries ago, then in all the impudence of ignorance we produce it as a new idea, born of our own incomparable sagacity. How the *Morning Post* or anyone else could speak of teachers as anything new passes ordinary comprehension. Nearly 350 years ago, this great London Head Master wrote:—" I have taught in public without interrupting my course now two and twenty years, and have always had a very great charge under my hand, which how I have discharged, they can best judge of me who will judge without me."[1] And again:—" I wish the parents and the masters to be friendly acquainted and domestically familiar. And though some parents need no counsel, as some masters can give but little, yet the wise parent will hear and judge, and the skilful master can judge and should be heard. Where neither of these be, neither skill of the teacher to tell it, nor will in the parent to hear it, and less affection to follow it, the poor child is wrung to the worse in the meanwhile, and the parent receives small comfort in conclusion."[2]

The *Morning Post* went on to argue that this "new race" would be a "healthy ferment" in the State; but it warned its readers of a "possible source of needless friction . . . the isolation of teachers into classes or castes." It then committed itself to a truly hazardous statement:—" The proper remedy is a gradual mixing of the classes such as would come about if the elementary teachers were encouraged to spend their two years as University students indistinguishable from the others, and living in the same hostels with them." Now, if the *Morning Post* thinks, as these words seem to imply, that there is some noticeable dissimilarity between elementary teachers and those whom it vaguely terms "the others," it must be optimistic indeed if it imagines that two years residence in a hostel are going to change it all, and obliterate every trace of distinction. I cannot pretend myself to any sympathy with this passion for making everybody alike. I think it would issue in hideous dulness; but the point is interesting because it really throws us back on the *raison d'être* of different classes in society, a problem, perhaps, which no one has ever treated better in English than this well-born, outspoken Cumbrian, Mulcaster, who made it his special, deliberate business to attempt to see things as they are.

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[1] Mulcaster *Positions*, ch. 1, p. 2.

[2] *Ibid.*, ch. 37, p. 155.

Though, through the operations of Henry VIII, the plutocracy had increased in numbers and substance by the middle of the sixteenth century, Mulcaster had no love for them, and as his speech was plain and pungent, the fact escapes:—"For of all means to make a gentleman, it is the most vile to be made for money. Because all other means bear some sign of virtue, this only mean is too bad a mean, either to match with great birth, or to mate great worth. For the most part it is miserably scraped to the murthering of many a poor maggot, while lively cheese is lusty cheer, to spare expenses, that *Jack* may be a gentleman."[1]

It is an interesting point about the Elizabethan *nouveaux riches*, that Mulcaster, with his phrase of "murthering many a poor maggot," does not hesitate to condemn the illicit way to wealth along the path of *sweating*, which, beginning to be a plague in Elizabethan England, has grown with the growth of the nation into something very like a national curse.

Mulcaster not only condemns questionable methods of acquiring great wealth; he doubts its intrinsic advantages. "The middle sort of parents," so he once wrote, "which neither welter in too much wealth, nor wrastle with too much want, seem fitteth of all, if the children's capacity be answerable to their parents' state and quality: which must be the level for the fattest to fall down to, and the leanest to leap up to, to bring forth that student which will serve his country best."[2] Which will seem strangest to the modern man—that Mulcaster should esteem a moderate fortune above great wealth, or that he should assume without argument that the normal person's natural aim is to serve his country? *Que sçais-je?* However strange it may appear in this plutocratic age, Mulcaster's opinion was shared by Latimer. In his last Lenten sermon in 1550, preached before Edward VI, the Bishop said:—"Hereby ye may perceive that it is not the abundance of riches that maketh a man to live quietly and blissfully. But the quiet life is in a mediocrity, *Mediocres optime vivunt*: 'They that are in a mean do live best.' And there is a proverb which I read many years ago, *Dimidium plus toto*, 'The half sometimes more than the whole.' The mean life is the best life, and the most quiet life of all. If a man should fill himself up to the throat, he should not find ease in it but displeasure; and with the one half he might satisfy his greedy appetite. So this great riches never maketh a man's life quiet, but rather troublous." Let us, however, be accurate. Money has its palpable and real uses; but not *for itself*, only because it can be exchanged for some things of intrinsic worth, whereas the higher goods of life are good in and for themselves. There is a difference there.

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[1] Mulcaster *Positions*, ch. 39, p. 193.

[2] *Ibid.*, ch. 37, p. 140.

A poppy is a devil-weed,
I said to him—he disagreed;
He said the devil had no hand
In spreading flowers tall and fair
Through corn and rye and meadow-land,
By garth and barrow everywhere:
The devil has not any flower
But only money in his power.

There is another difference there!

Mulcaster's method of dividing the social classes is quaint, yet shot through with common sense and keen perception. He divides the population into *gentlemen* and *commonalty*. He then subdivides the latter into *merchants*—i.e., all who live by buying and selling—and *manuaries*, "whose handiwork is their ware and labour their living." He then divides the gentry:—"The *gentlemen* which be the *cream* of the common; the *noblemen* which be the *flower* of *nobility*, and the prince which is the *primate* and *pearle* of nobility. Their difference is in *authority*, the *prince* most, the *nobleman* next, the *gentleman* under both."[1]

That Mulcaster is really dividing the populace by *function* is perfectly plain; he makes it still clearer when he writes:—"To be virtuous or vicious, to be rich or poor, be no peculiar badges to either sort, but common to both, for both a gentleman and a common man may be virtuous or vicious, both of them may be either rich or poor."[2]

The point is that their functions differ:—"As the gentleman in any degree must have foreign ability for the better executing of his lawful authority, so there be some virtues which seem to be wedded properly to that side: as great wisdom in great affairs: great valiancy in great attempts: great justice in great executions, and all things excellent, in a great and excellent degree of people."[3]

The age which gave us Hamlet's grim injunction—"get you to my lady's chamber, and tell her, let her paint an inch thick, to this favour she must come, make her laugh at that";[4] or Herrick's penetrating *Divination by a Daffodill*, possessed, at any rate, the gift of going straight to the point. Mulcaster shared it, and in dealing with class distinctions and the differing functions of differently placed persons, he expressed himself with biting force:—"Both the prince and the plowman be one, in respect of their humanity and first creation. And yet the prince is a thought above him, for all he be his brother in respect of old Adam."[1]

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[1] Ch. 39, p. 197.

[2] *Ibid.*

[3] Ch. 39, p. 198.

[4] *Hamlet*, V., 1, 312.

But if we wish to grasp Mulcaster's whole theory of social classes, we must turn from his chapter on gentlemen and wealth to the thirty-seventh, perhaps the most original of his contributions to what I may call the economics of pedagogy, where he treats with singular acumen the problem of equating the nation's workers to the nation's needs, and tries to get rid of the common unfortunate assumption that other people *ought* to be happy in our way. It seems the fashion now to speak and write as if the scholar's life were not only the most desirable life of all, but that, further, it is the indubitably right and possible life for everyone. This is a totally different proposition from that absolutely defensible and genuinely democratic view that neither birth nor sex is a legitimate bar in a person's way to scholarship. Surely all of us who possess at once decent feeling and adequate knowledge of human affairs can agree that no considerations of social class or of sex should, in a sound State, be allowed to prevent anyone, otherwise fitted, from pursuing the path of scholarship? But it is a far and a profoundly unphilosophical cry from that to the modern cant that all of us should be equally instructed. I venture to call it cant, because a very moderate exercise of observation will show any of us two facts: first, that by no means all are anxious to pay the price of being instructed—I mean, of course, the price in mental effort and perseverance; and secondly, that by no means all possess the capacities enabling them to profit by even the best education which can be given. I believe a very great step forward would be taken in this country, if the people who are responsible could firmly grasp the truth of Mulcaster's dictum—"There be many good means to live by, beside the book."[2] Far be it from me to belittle the joy of a scholarly life. What I wish to insist on, with this wise schoolmaster, is that that joy is only the possession of those endowed with the scholar's gifts, and that we do not all own these; and to urge, also with him, that there are many other gifts proper to many other walks in life which bring as much joy and contentment to those having them as the scholar's gifts bring to him. Perhaps, to forestall obvious objections, I may say that I duly recognize the obligation circumstances sometimes lay on special individuals to engage in an uncongenial occupation. I recognize, too, the fine character which such seemingly untoward plans may produce. But extreme self-sacrifice, though infinitely ennobling to the few, is less so to the great multitude of average people, whose medium virtues are acquired in less shining ways, for whom, however, ordinary rules are made, and concerning whom ordinary arguments hold; though, even in saying this, I am not suggesting that more self-sacrifice would not be good for us. All I do say is that for the majority the virtues consequent on self-sacrifice are not most wholesomely achieved by the sacrifice of natural bent. That seems to me to be one of the greatest of our gifts, one to be treated far more seriously than we are wont to treat it. Mulcaster goes on to plead that varied occupation is the very best condition for a community. Conceive of the intense dulness of the unvariegated life of learning and research: how monstrous and futile would that polity be, even if it could exist, where none practised agriculture, none engaged in manufacture and invention, none explored or hunted big game, or even played cricket as a profession. It is not only its dulness which condemns the bare notion of such a society; it is also the prodigal waste of

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[1] Ch. 39, p. 204.

[2] Ch. 37, 143.

"Fire God gave for other ends,"

which must ensue in a purely academic state. Endless are men's gifts: some can be used—it is a frightful thing to say but it is true—and used efficiently quite apart from any capacity to read or write. If content, usefulness, and an upright life can constitute a desirable and creditable course for a man, then who will deny that these are the lot of many a shepherd on the Sussex Downs or the Cumbrian Hills, whose untroubled blue eyes show no trace of the printed page's dimming power? I am not exalting the one life above the other: I am only pleading that both, and all the other endless varieties of occupation possible to human creatures, are, first, good in themselves; and, secondly, good for individuals strictly in accordance with their tastes and abilities; and I am urging that our baseless assumption that there is something intrinsically superior in the bookish person is leading us to disaster, and that not slowly. The State needs all kinds of workers. Nature has endowed us with extraordinarily different gifts, apt severally for these many kinds of work. And here are we, fatuously raising one occupation to a level above all the rest. Listen to Mulcaster:—" Wits well sorted be most civil, . . . admitting to uses only such as be fit, and seem to be made for them, pares off the unfit and lesseneth the number. . . . If that wit fall to preach which were fitter for the plough, and he to climb a pulpit which is made to scale a wall, is not a good *carter* ill lost, and a good *soldier* ill-placed? If he will needs law it which careth for no law, and profess justice that professeth no right, hath not *right* an ill *carver* and *justice* a worse *master?* If he will deal with *physic* whose brains cannot bear the infinite circumstances which belong thereunto, whether to maintain health, or to restore it: doth he anything else but seek to hasten death for helping the disease? to make way to murder, in stead of amendment? to be a *butcher's prentice* for a *master* in *physic?* And so it is in all kinds of life, in all trades of living, where fitness and right placing of wits doth work agreement and ease, unfitness and misplacing have the contrary companions, disagreement and disease. Again wits misplaced (be) most unquiet and seditious: as anything else strained against nature: light things press upward, and will ye force *Fire* down? Heavy things bear downward, and will ye have *Lead* to leap up? An imperial wit for want of education and ability, being placed in a mean calling will trouble the whole company. . . . Such a stirring thing it is to have wits misplaced, and their degrees mis lotted by the iniquity of *Fortune*, which the equity of *nature* did seem to mean unto them."[1]

No one can read Mulcaster's books, or know much of his dealings with his fellows, without realizing that he was essentially an aristocrat, and, like most whole-hearted aristocrats, a genuine believer in the sanest sort of democracy. But to this point I will return.

Again, how funny it is that people should fancy that it was Rousseau and Pestalozzi who first adjured us to follow nature! What about Plato, or Mulcaster? What about Comenius, who used the very phrase?

Just as he has sympathy with all social classes, planning the usefulness and content of all by just observation of their capacity to fulfil the several functions needed by the State, so Mulcaster appreciates both sexes. For the education of girls he advances four reasons:—

(1) The manners and customs of England.

(2) The duty owed to girls not to "leave them lame."

(3) Their own *towardness*, which GOD would never have given them to be left idle or to small purpose.

(4) The excellent results of giving girls a good education.[2]

He is very careful, however, not to exceed the English custom: it has not been the English practice to send girls to Public School or University; hence, in spite of the successful careers of such as Olympia Morata, he will allow nothing of the kind. Yet, with a system of private education, he will have them trained not only to read and write, to sing and play, but to attain such proficiency in "the best and finest of our learned languages" that they need not fear to challenge comparison with the "*German* or *French* gentlewomen, by late writers so well liked," or with "the *Italian* ladies who dare write themselves, and deserve fame for so doing."[3]

As to the matter of the "duty" owed to women, Mulcaster speaks generously and sagaciously, as we should expect. A man of his ability can admit all the good which can be claimed for women without any loss to himself. He calls them "our natural, next and most necessary friends . . . the only good to garnish our aloneness, the nearest companions in our weal and woe, the peculiar and priviest partakers in all our fortunes, born for us to life, and bound to us till death."[4]

It would be a pity to spoil by any comment so fine a tribute to that comradeship, that complementary aid which should obtain between men and women. From this description of women, Mulcaster draws the obvious inference that education is essential to the fulfilment of so great, so exacting a rôle as true helpmate to man.

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[1] Ch. 36, p. 138.

[2] Ch. 38, p. 167.

[3] Ch. 38, p. 168.

[4] *Ibid.*

Upon women's aptness for learning he spends no great quantity of words. His simple argument is that women have talents whose natural use is perfected by education, and that for all their natural talents women, like men, will finally be called to account.

Lastly, he turns to the world's learned women. Some of the familiar names of antiquity are cited duly, and then passing by such recent or contemporary paragons as the Estensi princesses, Lady Jane Grey or Margaret Roper, Mulcaster utters a panegyric on his Sovereign Lady—to whom his treatise was dedicated—returning thanks to GOD "which gave her unto us when we had more need of such a prince than she of such a people"; closing his remarks with the embracing observation: "We have besides her Highness as undershining stars, many singular ladies and gentlewomen, so skilful in all cunning, of the most laudable and love worthy qualities of learning."[1]

Reams have been written since Mulcaster's time in defence of the Higher Education of Women. It is doubtful if in the whole mass of elaborate dialectics any reasons have ever been propounded which were not implicit in Mulcaster's four most simple propositions. When one considers the plain sense of his suggestions, one wonders how the subsequent heat and strife can have been engendered.

I pledged myself to refrain from anything like an analysis of his book. I will therefore dwell on one more point only, his view of the teaching profession. He is not original in claiming that, contrary to common practice, the best teachers should be set to ground the youngest children. We may remember Philip of Macedon's message to Aristotle concerning Alexander's birth: "I thank the gods not so much for giving me a son, as for giving me a son when Aristotle can be his tutor." We know that Plato, Quintilian, Vergerius, Vittorino da Feltre, John Colet, Erasmus, had all insisted on this matter; we may recall the contempt poured on the latter by the dons of Queen's, Cambridge, when he searched the University for a surmaster for Paule's Scole. Nor is Mulcaster singular when he pleads for better remuneration for "Grammar Masters," on the sound ground that "good entertainment . . . will always procure most able persons."[2]

But I think, considering the time and place, he was original when he proposed the division of the colleges in the University *according to professions and faculties*, and most markedly so of all, when he urged that when "Tongues," Mathematics, Philosophy, Medicine, Divinity, and Law had received due provision, then the seventh College should be devoted to the training of teachers.

To those of us who can remember the days when some Newnham students, not having unlimited time at their disposal, weighed against each other three years at College against two years at College and one at the Training College, and some decided on the latter course,

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[1] Ch. 38, p. 174.

[2] Ch. 41, p. 235.

Mulcaster's insistence that learning and training cannot be regarded as *alternatives* is illuminating. He is speaking of intending teachers, and he asks—"Why should not these men have both this sufficiency in learning and such room to rest in thence to be chosen and set forth" (i.e., trained) "for the common service? Be either children or schools so small a portion of our multitude? or is the framing of young minds and the training of their bodies so mean a point of cunning?"

Again the question occurs, as concerning women's education, have all the books written since adduced any argument more cogent than Mulcaster's? What are the soundest reasons for training teachers? Just his: that schools and children are the nation's seed-plot; that the framing of young minds, the training of young bodies, far from being "a mean point of cunning," demand great knowledge, much effort, rare skill, none of which come by nature.

We know that Mulcaster had a shrewd tongue. Most effectively he uses it here:—"He that will not allow of this careful provision for such a seminary of masters, is most unworthy either to have had a good master himself or hereafter to have a good one for his."[1] Which really seems to clench the matter.

In this remarkable book of the English sixteenth century, there are many other topics of importance. I have chosen, as I said, those which appear to be most germane to our present position. It is, perhaps, depressing to realize that we have made so little progress in wisdom since 1581, when Mulcaster published *the Positions*. A sounder, cheerier reflection shall be our closing thought, in the form of a query: What can each one of us do, actively, practically *do*, to prevent the progress of the next 300 years from being equally slow, equally small? The answer is suggested by Mulcaster himself. With the enlightened Spaniard, Juan Luis Vives, he shares the distinction of having grasped the essential change which must come in the main problem of education. The aim of Plato, of the Mediaeval Christians, of the great thinkers of the Renaissance, was restricted by their identification of education and learning. The latter is obviously only possible for some in every community, hence that which Prof. Foster Watson calls the "aristocratic element" in their education; an element he declares to have "gone under," in the days of the French Revolution.

But aristocracy never can "go under"; it assumes different shapes: now it is of birth, and then, vilest of all, as Mulcaster says, it is of money. But there is all the time the abiding aristocracy of ability leading to achievement. Among the men of the first fifteen centuries, achievement educationally meant learning.

But there seems to have dawned on Vives and Mulcaster, how clearly we can hardly now gauge, a vision of the hive of human industry, the world of industrial and agricultural production, the world of commercial *exchange*, necessitating all the details of wholesale and retail trade, of banking and foreign trade; the world of legislation, and of the executive; the Army and Navy; the business of education; the work of healing; the prosecution of the arts and sciences, of literature and philosophy. The world was not, surely, to these two enlightened spectators, a Republic of Scholars, but a world of men and women and children, of whom scholars formed one small part; and they saw that it was no longer a question of fitting a few for a life of culture and beauty, while the rest fared as they might. The problem was no longer *qualitative* only (I borrow Prof. Foster Watson's phrase), but quantitative, too. The problem, so infinitely complex—all the more so because we allowed the modern economic system to catch us and enslave us unawares—is to fit, not by mere intellectual instruction, but by multi-sided education, the mass of children, so soon to be citizens, to the needs of the community which they are to serve. On both sides there is complexity: on the side of the children are many abilities, varying bent, numerous weaknesses and defects; on the side of the community the needs are also many, also various, and very difficult to gauge.

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[1] Ch. 41, p. 248.

It is no matter for oratory nor platform sentimentality: it can only be solved by a genuine knowledge of human nature combined with an accurate acquaintance with the actual facts of a nation's everyday life. It is a huge equation of *demand* (the nation's requirements) to *supply* (the children's capacities).

There is no room for levelling down: the *qualitative* problem of the earlier ages is as insistent as ever, only now we must take account also of the quantitative; and, doing so, we must make, not a theoretical, but their own uttermost best of each diverse child. It is neither aristocracy nor democracy, in their accepted sense, but the recognition that as the work to be done differs, so do the powers of those who do it vary. What we need is the systematized direction of all classes to one common end: it is the merging of separate interests into that Christian fellowship which has always had as its motto, however it may have forgotten or overlaid it, the rememberable words: "Ye are members one of another."

EDUCATION AND THE CREATIVE INSTINCT.

By LILIAN DALY.

THOSE who think deeply about educational and social problems are driven at times to attempt to unify such problems, or at least to find some root problem from which the others may be traced. This helps—not to solve them—but to clear up our thoughts about them, so that some order arises out of the chaos before our minds. When faced with controversy about such questions as "The Teaching of Eugenics," "The Place of Handwork in Education," or "Pictorial Art in Schools," one feels bothered by the tangle of educational problems as an unmanageable whole, and feels relieved to get out on a stretch of bog or moorland—anywhere spacious enough and "alone" enough to think quietly—What really is man? and What is the education of him? And then, like Elijah of old, what we fail to find in the wind or the earthquake or the fire of discussion comes to us as a still, small voice out of the silence of empty spaces. At such times, facts that we have long known apart have a curious way of joining up in our minds with a startling force, like a flash-light coming out of the dark—and we see accordingly.

Thus arises the thought, "In the beginning GOD created," and concludes itself, "and GOD created man in His own image." Man stands before our thought as "informed by" (in the Latin sense) the creative instinct. Life, i.e., *means* for man a projecting of himself beyond himself: creation means an externalizing of *oneself*—like radium, a giving forth without loss. The philosophy which viewed man as spirit imprisoned in matter has given place to a school of thought which sees in matter a medium through which spirit energizes and finds expression: in the words of a contemporary writer—"As the essential fact concerning any given cell of protoplasm is its function in purpose and not its chemical composition, so the energy of all life is accounted for only in its creative power." In large perspective this appears true of the race. Eastern minds have given to the world religion and philosophies. Western minds have given to mankind literatures, arts, sciences, and laws—all great creations by men for man. In smaller perspective we see the same creative energy in the individual. The child builds his castle in the sand—thus he projects his ideal, *himself, to that extent.* The boy and girl similarly put forth their ideals, occasionally in speech to an intimate, more commonly, I suspect, in verse seen by no one but themselves, because for some curious reason I think one is shy of revealing one's biggest ideals, perhaps just because they are of *oneself.* The man or woman later on obeys the nature of their being through their literary or artistic composition it may be, or through that embodiment of an ideal that we call a child.

Again, it would seem that energy manifests its excellence through the perfection of its products. From the lilies of the field we learn much of the Power that brought such things forth. Their perfect adaptation of structure to function appeals to our understanding, and satisfies our feeling after purposiveness and service. While the beauty of them, apart from any utilitarian suggestiveness, by its very lavishness, charms that element of our being that does not seek for reasons. Thus the complete loveliness of nature as revealing the perfection of the thought that conceived it, is abundantly satisfying to man's capacity for admiring wonderment.

It is in connexion with this notion of activity energizing with perfection that one seems to strike a fundamental defect in modern educational practice in many schools. We agree that children's creative activity should be given scope. We have realized with Dewey that, separated from real needs and motives, such exercise becomes a mere mental gymnastic of no educational worth. We feel with Professor Finlay and Colonel Baden Powell how essential it is to inculcate the habit of service, so as to avoid training an adult population content to drift uselessly through life, and ready to be debtors to anyone who is willing to wait upon their needs. What we do not seem to be realizing to the same extent is the very far-reaching social necessity of training children to take a pride in the *perfection* of their work, so that each child may find personal satisfaction in knowledge that, relative to his capacity, his work is in every case "very good."

I should like at this point to urge the reality of children's "work" instinct. In their anxiety to rescue the "play" instinct from oblivion, writers for the most part ignore the "work" instinct with very disastrous educational effect. Children *enjoy* taking trouble and, like grown-up people, they like to realize the worth of their labour. Quite a little child will take trouble to grow a flower for its mother's birthday; a youth will spend himself to get a good place in a qualifying examination for the pleasure of doing well; and if given the ideal, young men and maidens will care to take trouble to keep themselves suitably equipped, should the privilege come to them, for passing on the torch of life undimmed, and as perfectly fitted as possible to lighten the upward path of mankind towards perfect day.

Thinking thus, one questions seriously the method by which certain points of theory are being applied by many teachers.

For example, we all agree that every child should be encouraged in its attempts. But does it follow that careless, indifferent work must be accepted with approval. Yet this is what is constantly being done by the "kindly" teacher. She displays *everyone's* "banana," until the school wall becomes a litter of drawings calculated to destroy any class's appreciation of art, and absolutely to deaden children's sense of beauty. It takes little thought to see the absurdity of this. Children themselves are severe critics, and, so far from being encouraged, learn to despise the teacher who calls bad work good. Those who do the bad work get no stimulus to improve, and those who can do well grow careless when they have no standard to live up to. By all means let us encourage children, but let us take care that our method of encouragement is ethical in its basis. To this end we suggest that children gain more inspiration and stimulus from being told that their work shows promise of greater things if they persevere, than by being given the impression that they have achieved their goal by having their work displayed about school walls as part of their permanent decoration.

Another point we would like to urge is that children might be more freely allowed to possess their own work when good enough. Handwork completed by children for some object on which they choose to bestow their labour would provide motive for good work. A basket made for a parent, or friend, would secure much more genuine and pleasure-giving effort on its making than the same article when kept in school for a possible inspector to behold. The few occasions on which I asked for volunteers to make a model I wanted to use for a geography lesson have served to show me the essential difference between work done contentedly and happily enough, and work done with *enthusiasm* because its product was going to be necessary to someone.

Again, one wonders how wise it is to let children attempt what, from the nature of the case, can never pretend to be even approximately correct. Thus, what is the educational value of impromptu "dramatization" as practised in class? "Tommy, come out and be the Alps, and Johnny, come and be the Appenines." Or even when a puny little child arrayed in cardboard helmet and shield stands before a class to present to them a Roman soldier—history's ideal of force and endurance. Or again, one cannot help comparing the effect of the story of the Good Samaritan "dramatized" in class, where a few children go through a pretence prompted in word and act by the teacher, and the same principle enacted by the Boy Scout who is required by his "Rule" to perform a kind action each day.

To turn from the motor to the more purely mental, but none the less creative, activities of children, we venture to suggest that more care might be taken to secure really good products in this sphere also. Literary appreciation might be oftener used as a basis for literary skill. Most boys and girls attempt verse out of school—why not do this more frequently in school? We learn much of what we cannot do when we view our failures in the light of other people's successes. On some rare occasions we discover a success in our own work. In this way we learn self-criticism and so avoid the "Uriah Heep" estimate of ourselves, which is no less objectionable and futile than its opposite—empty conceit. What is true of literature is equally true of other school pursuits where appreciation may be cultivated as a standard for "expression." Such thought as children require or care to express should be treated with respect as to its accuracy and its form of expression. Praise given to answers, for example, which are neither accurate replies to the questions asked, and which are worded without the slightest regard to the accurate use of vocabulary, is doing much harm to the mental and moral calibre of the children in our schools.

How to secure the capacity for the creation of thought noble in itself is beyond the scope of this paper, but I was struck by a criticism a teacher gave of a story lately told to a class. To her it was unsuitable because it could not be "reproduced," i.e., could not be "dramatized" or used for oral composition. The suggestion that it was chosen to give "thoughts" a "point of view" seemed new to her, and her attitude showed that she thought valuable time had been wasted. Yet we have the familiar saying that "As a man thinketh in his heart so he is," to encourage us to train boys and girls to see that their "thought" products in themselves shall be pure and lovely and of good report.

Thinking thus of "educational" practice as it goes on day by day in the schools of the Nation, one fears that we are giving rise to a great extent to the evil habit of satisfaction with indifferent results. Children grow up without respect for their own powers, hence learn to use them carelessly without due thought, and with little regard for the products involved. And one feels certain that one essential factor towards setting this right is to centre attention on, and to provide more inspiration for, producing what is perfect. And three main considerations, as we suggest, seem necessary to secure this. First, to see that the exercise of the child's creative activity is called forth by a real need; secondly, to supply a genuine motive to the child for desiring to fulfil the need; and thirdly, to see that the task is duly within his power to at all events attempt ably.

In conclusion, I venture to suggest that care taken in these directions will have definite bearing on man's main creative activity and hence on society, and that much may be lost by not keeping our thoughts about Eugenics side by side with thought about the rest of his activities in a well-balanced system of values. Man's highest activities are those which have the most far-reaching results, acts of his which once put forth he cannot recall, and cannot control in their effects on his own and future generations. His writings—his pictures—his inventions—his children—all together stand for the meaning of the individual to the race—all together form his significance in the universe, that scheme of Being which man is privileged to promote or to mar—as he will. Whether leaving him satisfied with low standards; teaching him about the evil results of his mistakes; or implanting in him ideals together with the inspiration to strive towards them is the best training, we question. No doubt what is required is a combination of all three, and we would urge that evil is exposed safely only by the light of the ideal, and that both methods of warning and encouragement receive a valuable and necessary backing in the *habit of good workmanship.*

HOBBES AND THE ASSOCIATIONIST PSYCHOLOGY.

By ALBERT A. COCK.

THE English philosophers of the seventeenth and eighteenth centuries were, says Dr. Ward, less important for their metaphysics than for their powerful psychology. This is particularly true of Thomas Hobbes. His ethical position is nauseating, but his psychology tantalizes in its very acuteness. Even his most outrageous ethical positions have a plausibility provokingly psychological. "The Value or Worth of a man," for instance, is for Hobbes, "his *price*; that is to say, so much as would be given for the use of his Power, and therefore is not absolute, but a thing dependant on the need and judgment of another. An able conductor of soldiers is of great price in time of War, present or imminent; but in Peace not so."[1] There is here not the slightest recognition of the "thoughts hardly to be packed into a narrow act" which made Rabbi Ben Ezra of worth to GOD, yet Hobbes has clearly seen that in the main personality must be linked to service, must respond to others' needs. The same shrewd one-sidedness runs through all his work.

It is our purpose, however, to show that in his observations on Association Hobbes not only became the father of modern associationist psychology (according to Windelband), but that he carefully indicated in his doctrine those qualifications which are necessary to prevent it from degenerating into mere mental atomism. In this respect he appears to have been somewhat neglected. Dr. Stout refers in his "Analytic Psychology" to Hobbes' treatment of Conation, quotes his phrase "ranging" in his chapter on Apperception, but makes no further reference to Hobbes' doctrine of Interest and Purpose, nor does he allude to him in his chapter on Association. In the new edition of his "Manual of Psychology" no references to Hobbes appear. Ward's article on Psychology in the "Encyclopædia Britannica" (9th edition) contains a discussion of the doctrine of Relativity in Hobbes, but no reference to Association in him. Dr. Maher's "Psychology," which is full of useful historical references, notes that Hobbes made "occasional observations on the power of association," but adds that "it is clear from the terms and phrases which he employs that, in spite of his vigorously-expressed contempt for the schoolmen, he silently borrowed from them on this topic."[2] Even if this be so, however, Dr. Maher, like the rest of our authorities, fails to appreciate Hobbes' seizure of the part played by Interest. Curiously enough, it is in a foreign history of philosophy that we find Hobbes' work fairly recognized. Höffding, in his "History of Modern Philosophy" (Vol. I, p. 276f) pays considerable attention to this point, though he does not clearly perceive that Hobbes' doctrine really implies Paulhan's laws of systematic association and inhibition.

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[1] Hobbes' *Leviathan*, Part I, C. x. Clarendon Press, 1909.

[2] Maher's *Psychology*, 5th edition, p. 203.

The doctrine of Association current in Bain's time has been since recognized, of course, as insufficient to explain mental activity as a whole. We are no longer content to regard that activity as fortuitously dependent upon so-called "laws" of contiguity and similarity. Descriptions are not explanations, and only a purposive or teleological view of attention can explain just why one particular association is recalled at a given moment in preference to another. It is the merit of Hobbes to have offered both description and explanation, though his successors noted the former and overlooked the latter.

Hobbes' account of Association is to be found in the third chapter of "Leviathan," and is entitled "Of the Consequence or Trayne of Imaginations." He begins by observing the fact first. "When a man thinketh on anything whatsoever, his next thought after is not altogether so casuall as it appeareth. Not every thought to every thought succeeds indifferently." This frank recognition of orderliness in our thinking, however, has to be consistent with Hobbes' nominalism and materialism. He cannot carry it too far, for he cannot admit a priori categories that transcend the data of sense. Accordingly, he hastens to add that although our thinking is not so "casuall," only this is certain—"because in sense to one and the same thing perceived, sometimes one thing sometimes another succeedeth, it comes to pass that in the imagining of anything there is no certainty what we shall imagine next: only this is certain, it shall be something that succeeded the same before at one time or another." This gives us, then, the law of contiguity as the one thing certain, and it is this which Hobbes' successors most readily seized. Thinking is not casual. Orderliness cannot be denied, but it is sufficiently explained by reference to Association by contiguity in time or place. This is all that the empiricists want, all that they can safely admit, but Hobbes at this stage is uneasy whether it is wholly adequate. Fancies, imaginations, and all other "motions of decaying sense" occur and cohere in such manner, he says, and with such coherence "as water upon a plain Table is drawn which way any one part of it is *guided by the finger*." It is not mere fortuitous Association. There is guidance. Hobbes' simile of the guidance by the finger therefore leads him in his next section to go beyond mere succession in time.

He discovers two sorts of "traynes of thought": the one unguided, the other regulated. The classification itself shows that Hobbes perceived the merely descriptive nature of the "law" of Association by contiguity. The first kind of thought he discovers to be unguided, *without design*, and inconstant. He tells us why such "traynes" are inconstant. "Therein is no passionate thought, to govern and direct those that follow, to itself as the end and scope of some desire or passion, in which case the thoughts are said to wander and seem *impertinent* to one another as in a dream." This is his first and negative recognition of the control exercised by interest and purpose. Lacking the "passionate thought," the members of this unguided "trayne" wander about "impertinently." They neither associate with nor inhibit one another. Even so, however, some sort of sequence can be detected, and Hobbes indicates it quite decisively. "In this wild ranging of the mind, a man may oft-times perceive the way of it, and the dependance of one thought upon another." He gives an interesting example of this: the thought of our present civil war (1651) starting a series of associations that ended in the question of the value of the Roman penny in the time of CHRIST. Hobbes utilizes this example to show that even in unguided ranging coherence can be detected upon observation. He did not further point out that it was his interest in the philosophical theory of the State—"Leviathan," in short—which controlled that "wild ranging of the mind" in himself. The direction of even our day-dreaming is largely determined by our dominant interests, and Hobbes was no exception to this rule.

The second and more constant "trayne" of thoughts which Hobbes deals with is more constant. It is, he says, "regulated by some desire and designe." Surely this is a clear and emphatic statement of control by some purpose or end? It passes beyond the mere description of association by contiguity, &c., to an indication, clear and unequivocal, of the real cause of one revival in preference to another. But Hobbes is even more emphatic. "The impression made by such things as we desire or fear is strong and permanent," he writes, "and (if it cease for a time) of quick return—the end, by the greatness of the impression, comes often to mind." Where our interest, then, is intensest or greatest, there revival will be most likely to take place. Moreover, the strength and permanence of an impression will partly depend, as he says, upon whether it arises from things which *we desire.* We have Hobbes enunciating thus early a doctrine of purpose and personal interest which has only recently become the commonplace of educational psychology. Locke, to whom the phrase "Association of Ideas" appears to be due, has a chapter so entitled in the Essay (Bk. II, c. 33), and a section (41) on the same subject in the "Conduct of the Understanding," but in both cases he regards Association as something really unreasonable, due largely to custom, inclination, and different interests (Essay II, c. 33), and further, as requiring "remedies" to be applied to "this way of operating in the understanding." (Conduct, Section 41). It would, indeed, appear that Locke entirely failed to appreciate the significance of systematic Association so clearly set forth by Hobbes.

For we have not yet exhausted all that this one chapter from the "Leviathan" contains. Can we find Inhibition and System really appreciated in Hobbes? He is dealing, let us recall, with the "trayne of thoughts regulated by some End." He continues: "And because the End, by the greatness of the impression, comes often to mind, *in case our thoughts wander*, they are quickly again *reduced into the way*." There can be no doubt about this: not only does the purpose or end control the normal sequence of thought and association, but in case our thoughts wander they are inhibited. Intruders are excluded. Thought is, as he expressively puts it, "reduced into the way." There is not only inhibition, then, but inhibition in the interests of a "way," a system, as we should say. The end and the way, the purpose and the relevant system, these are the guiding forces in "the trayne of thoughts regulated." Locke, who has no notion of such teleological control in the association of ideas, is concerned to find remedies and precautions against it, but Hobbes, recognizing this systematic association and inhibition, or reduction into "the way," applies it to the interpretation of the maxim, "*Respice finem*"; "this is to say, in all your actions, look often upon what you would have as the thing that directs all your thoughts in the way to attain it."

Nor does Hobbes fail to show that this is not a chance observation of his. He applies it to another theme, the process of recollection. He notes that "the discourse of the mind, when it is governed by design, is nothing but seeking," and therefore to find anything (whether material or mental) there must be "a method of seeking. . . . Sometimes a man knows a place determinate, within the compass whereof he is to seek; and then his thoughts run over all the parts thereof in the same manner as one would sweep a room to find a jewell, or as a man should run over the alphabet to find a rime." Recollection, then, is facilitated by system and systematic association. Find a cue within the compass wherein we are to seek, and the end will be more speedily reached.

We contend, then, that Hobbes' chapter on "Traynes of Imagination" does justice to both unregulated and regulated thinking. Professor Taylor, in his little book on Hobbes (Constable, 1908), admits that he distinguishes between random and purposive Association, but contends that the latter "ought really to present a difficulty to Hobbes." That it does not do so, however, is due to the fact, which we have endeavoured to demonstrate line by line from Hobbes, that he realizes that purpose and relevance to a system dominate regulated thinking. Professor Taylor quotes freely from the chapter under discussion, but strangely neglects the significant passage that "in case our thoughts wander, they are quickly again reduced into the way." We urge that the true reading of this passage carries with it Hobbes' recognition of selective attention, and that it was not he but his successors who regarded Association as a purely passive process, the more or less fortuitous concourse of contiguous or similar impressions. "In an orderly train of purposive thinking," says Professor Taylor, quite truly, "Association appears as often as not as a disturbing factor and source of pure irrelevance."[1] But surely this is exactly what Hobbes has recognized. He has carefully separated "trayne of thoughts unguided" from "trayne of thoughts regulated." He has noted in the former, ordinary common Association by contiguity and similarity. In the latter he has as clearly stated that thinking is regulated by design; and further that that design or end can, when our thoughts wander, reduce them to "the way." What is this but the determination by relevance to purpose which we all now insist upon? The "trayne" of thoughts unregulated is irrelevant to the "trayne" of thoughts regulated, and consequently the end or design in the latter represses any tendency for the former to arise. Much of Professor Taylor's general criticism of Hobbes' sensationalist psychology is obviously sound. As we have seen, Hobbes' nominalism and materialism prevented him from making the fullest use of the teleological view of attention, but it is, at the same time, only fair to realize how far he does go in the one field of Association.

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[1] *Hobbes*, by A. E. Taylor, p. 61. Constable, 1908.

We conclude, then, that Hobbes has been underestimated in this respect. The credit for insisting upon the teleological side of Association cannot be wholly limited to modern psychologists. Moreover, if the Associationist school had more closely examined Hobbes, their fallacious doctrine that mere contiguity and similarity are sufficient to explain revivals of any kind could hardly have been sustained and accepted for so long as it was. The schoolrooms of the seventeenth century, Professor Adamson tells us, were unaffected by the New Philosophy,[1] and apparently Hobbes no more than Bacon influenced the avowed writers on education of his day. But he deserves attention, nevertheless, in the history of educational psychology for his sure grasp of the essentials of a very vexed doctrine.

A NEW TEST OF REASONING.

BY W. H. A. DOCKERILL, M.A., AND A. J. FENNINGS.

The Object of this Paper.

THE object of this paper is to advocate a reasoning test based on proverbs. The conclusion of an important investigation by Mr. C. Burt was—"Of all the tests proposed, those involving the higher mental processes, such as Reasoning, vary most closely with Intelligence, and are least vitiated with irrelevant conditions, such as sex, social status, training of the experimenter, and mass-measurement of numbers of children at once."[2] It follows that it is highly desirable to construct tests of reasoning power, and we believe that the material and method indicated in this paper are capable of providing standard tests of reasoning which will allow independent workers to make accurate comparisons of their results.

Current Tests of Reasoning.

Up to the present time there have been devised five tests of the higher mental processes which have come into general use. One of the best known is the Opposites Test, which is almost a purely verbal test depending very largely on the extent of the vocabulary of the subject. This dependence is a serious objection when the subjects of an investigation are children. If a subject does not happen to know the opposite of a given word, no amount of logical power will enable him to discover it, always excepting such opposites as are formed by simply prefixing un, in, &c. Thus this test is mainly a test of a particular kind of verbal association.

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[1] *Pioneers of Education*, p. 18.

[2] See this journal, Vol. I, No. 2, p. 112.

The Analogy Test is open to the objection that the number of available examples is comparatively few. It is also questionable whether analogy alone is a process of reasoning in the strict sense: it involves judgment of identity or equality, its logical form being, *This S is an S*, and is therefore probably an essential part of reasoning but by no means the whole.

The Syllogism Test would be very valuable if only it could be successfully applied, but although there is a great variety of figures and material, the drawing of a correct conclusion is no easy matter even after considerable training. With tests on children the reliability coefficients of different tests are usually low.

The Sentence Test, that involving the closest possible connexion between two words, has the defect of indefiniteness. The range of answers is so wide that marking is very difficult, and therefore the reliability coefficient is small.

The Argument Test, that is the filling in of the *mot juste* required to complete the meaning intended by the author, is marred by the extent to which success depends upon power of literary expression. It is essentially an exercise in appreciation, and gives advantage to subjects who are wide readers rather than clear reasoners. The marking of the answers is obviously difficult.

Reviewing these tests as a whole, the conclusion seems to be that when they are good tests of reasoning they are impossible, and when they are possible they are not good tests of reasoning. There are three desiderata for a test of reasoning:—

(*a*) The test must aim at measuring reasoning power in the sense of deduction or induction;
(*b*) The questions set must admit of being definitely answered; and
(*c*) Plenty of material for setting tests must be available.

The proverb test fulfils these requirements more strictly than the tests we have just reviewed. At any rate, such is our experience.

The Proverb.

Abbé de Saint Pierre defined the proverb thus: "Les proverbes sont les echos de l'experience." The well-known definition of Lord Russell that a proverb is "The wisdom of many and the wit of one" serves to bring out its two salient features, namely, its brilliancy, terseness of expression, and its embodiment of universal experience. It is experience diamondised; a sparkling essence of worldly wisdom perpetuating a popular philosophy of life. Psychologically considered, it is a pithy, piquant summary of common, universal experience intended for guidance of the individual. It is usually didactic in its aim, being either a text or a condensed allegory—either potted morality or a tabloid fable.

Proverbs are akin to allegories or fables in having a hidden meaning to which their wording supplies the clue. This underlying meaning is precise. To find it is by no means an easy task, especially if a rigorous and precise statement is required, as in a written test. We utter a proverb glibly a hundred times, but are usually more or less ignorant of its exact import, being quite content with the hazy mental content that represents it in thought. We usually have no active realization of its exact significance and application. The framing of a definition is analogous: everybody knows the meaning of the words knife, horse, &c., but if, as a logical exercise, one is asked to give a definition of such common objects the task is exasperatingly difficult, a sort of task of Tantalus. To separate *proprium* from *accidens* requires steady concentration of mind and clearness of thought. The difficulty of interpreting a proverb varies with its expression, a difficulty which is greater than is ordinarily recognized. Particularly is this so with the proverbs current in foreign countries, especially of those proverbs evolved by nations loving highly coloured language and metaphorical expression as dearly as they love brilliant dress and intricate pattern in ornament. The meaning is precise and of universal application, but by no means obvious. Any book of proverbs will supply readers with examples with which to test this statement.

When tests are framed for use in schools the selection is limited, for only those proverbs which relate to experiences within a child's knowledge are eligible, preferably those that are "familiar in our mouths as household words." For tests on adults the material available is practically infinite.

The Logical Aspect of the Proverb.

Logically considered, a proverb is a universal proposition. It contains implicitly a multitude of particulars: to state these instances is a logical exercise in passing from the general to the particulars composing it, that is, an exercise in deduction. It is more than analogy. Take for example, "All is not gold that glitters." A strict analogy would be, All is not music that sounds. To give a case illustrating the proverb requires more than this, something more personal, definite, and particular. Psychologically it involves a rummaging of memory, selection and rejection among possible examples and good judgment. Above all, "Consistency is a jewel."

To re-combine these instances so as to sum up their meaning in plain language is an exercise in inductive reasoning: the problem is to lay bare the "wisdom of many," and to state it in ordinary terms.

These two exercises taken together form a genuine test of logical power, that is an exercise in deduction and induction. The following is our first proverb test.

A Proverb Test.

A. Instructions.

1. Answer the questions in any order you please.
2. Write on *one* side of paper only, and keep each answer on the same sheet.

3. Read *very carefully* the model answer below, and arrange your answers on the plan shown in that model, each having two parts—
   (*a*) The *best illustration* of the proverb that you can think of.
   (*b*) The *real meaning* of the proverb expressed in ordinary language.

[1]4. Long answers or explanations are *not* asked for.

B. MODEL ANSWER.

Question. More haste, less speed.

MODEL ANSWER. (*a*) *Illustration.*—Man gets up late, hurries to catch train, slips, and breaks leg: does no work.

(*b*) *Meaning.*—Hurry in doing a thing prevents it being done in the best way.

C. QUESTIONS.

1. All that glitters is not gold.
2. The early bird catches the worm.
3. A stitch in time saves nine.
4. Too many cooks spoil the broth.
5. Make hay while the sun shines.
6. Birds of a feather flock together.
7. Straws show which way the wind blows.
8. A new broom sweeps clean.
9. A bird in the hand is worth two in the bush.
10. Cats in mittens (gloves) catch no mice.

The Method of Marking.

In setting the test, two examiners meet and agree on ten proverbs, which can be reduced to the logical form, All S is P. They then agree upon the meanings, and state them in the following manner, each meaning containing two ideas (or terms) that is S and P. The following are the meanings decided on for the test just given.

No.	S	is	P
1	Appearances	are	deceptive.
2	Opportunities seized	are	rewarded.
3	Promptitude	prevents	unnecessary labour.
4	Excess	produces	a worthless result.
5	Opportunities	must be	seized.
6	Like	attracts	like.
7	Little things	show	the trend of affairs.
8	Novelty	creates	a favourable impression.
9	A little possessed	is	better than more anticipated.
10	Misused things	are	useless.

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[1] The time allowed was unlimited, the papers being gathered up as finished.

The test is graded, the last five being more difficult than the first five. The next step is to agree on the method of marking. A preliminary process found most efficient in assisting the examiner to keep his standard of marking from varying is first to cut the answers out, each slip of paper containing one answer, and then to arrange the answers in ten packets, each packet containing all the answers obtained to one question. Before cutting out the answers, a number is given to each answer, and this number corresponds with the name and number on each examiner's marking sheet. The marks given to each answer are recorded opposite the name and number on that sheet, and at the end of the marking the total for each examinee is obtained.

In marking the test given above, the following scale was adopted. Ten marks were allotted to each question, the total possible being 100. The marks for each question were awarded as follows :—

Illustration (answer *a*).	1 mark	for a mere writing of the proverb	These were essentially paraphrases
	2 marks	,, good statement of the proverb in different words, but using similar ideas.	
	3 ,,	,, moderately clear illustration of S, using different ideas from those contained in the proverb.	These were illustrations that were not mere paraphrases.
	4 ,,	,, clear illustration of the S.	
	5 ,,	,, clear illustration of the S (or P) plus a moderately clear illustration of P (or S).	
	6 ,,	,, clear illustration of both S and P.	
Meaning (answer *b*).	1 mark	,, moderately clear statement of either S or P.	
	2 marks	,, clear statement of either S or P	
	3 ,,	,, clear statement of S (or P), and a moderately clear statement of P (or S).	
	4 ,,	,, clear statement of both S and P.	

This scale was devised in order to mark papers worked by children in the upper classes of elementary schools whose ages varied from ten to fifteen years. With older subjects the scale could be much simplified. Some answers were not amenable to the above scheme, and these were dealt with on their merits, a proportion of the total marks being given. The essential part of the marking is keeping a keen outlook for both S and P in both illustration and meaning, and also for consistency in illustration and meaning which serves as a valuable means of checking each answer. Provided this is done, the marks of two independent examiners will invariably show a high reliability coefficient.

After the totals have been obtained the average of the two markings is found, and the names are placed in ranks, the child with the highest marks having the rank 1, and so on to the last. This ranking is then correlated either with the teacher's estimate of the class with respect to intelligence, or, when the teacher hesitates about giving this, on the ground, e.g., that the class is new to him, the correlation was made with the order given by a recent class examination.

In the case of two classes (see table of results) special papers were set in Arithmetic and in English with a view to ranking the pupils more accurately in order of general intelligence. The Arithmetic papers contained ten questions, each with three or four connected parts, each part being a little more difficult than the previous part, and ranging from very easy to difficult. The English papers were of a similar character, and included description of well-known things, filling in missing words, definitions, using the same word in three different senses, and the writing of directions to guide an imaginary person in doing something for the first time.

Correlation of the rank in this examination with rank in the proverb test gave a higher result (see table), and is decidedly better than using the teacher's estimate. Incidentally it tends to confirm the practice of the Board of Education, and of the London County Council Education Authority in selecting scholarship children on the results obtained by means of papers in Arithmetic and in English.

Tabular Statement of Results.

[1] School.	Kind of School.	Sex of Children.	Form or Class.	No. in Class.	Av. Age.	R.	*r*.	Correlation with
Ackmar Rd. L.C.C.	Elem.	Boys	VII	34	13·5	·44	·64	Place in class.
,, ,, ,,	,, ...	Girls	VII	30	14·0	·46	·66	,, ,,
,, ,, ,,	,, ...	Boys	VII	34	13·5	·62	·83	Examination in Arith. and Eng.
,, ,, ,,	,, ...	Boys	VI	25	11·8	·37	·55	Teacher's estimate of intelligence
,, ,, ,,	,, ...	Boys	III	34	10·0	·49	·70	Aver. of six monthly class exams.
Royal Hill ,,	,, ...	Girls	VII	39	13·5	·41	·60	Teacher's estimate of intelligence
Upper Latymer Sch.	Secondary	Boys	Va	28	14·5	·54	·75	Place in terminal exam.
,, ,, ,,	,,	Boys	Vb	25	14·3	·51	·72	,, ,, ,,
,, ,, ,,	,,	Boys	Vc	20	14·8	·55	·76	,, ,, ,,

The correlations were calculated by means of Prof. Spearman's Foot Rule, and the *r* value was obtained by using his Conversion Table.[2]

A second set of proverbs is now being used with the same classes. So far, but two sets of papers have been marked, but these have yielded reliability coefficients of ·92 and ·85, thereby indicating a probability of this test giving substantial results.[3]

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[1] We desire to tender our thanks to Miss D Bedloe, Miss Lead, Rev. C. J. Smith, Head Master of the Upper Latymer School, and Mr. G. H. Bedloe, Head Master of Ackmar Road L.C.C. School, for the facilities they have generously accorded us in our work.

[2] This journal, Vol. 1, No. 3, p. 218.

[3] We hope to publish later on further results with more mathematical detail.

SPELLING ERRORS IN CHILDREN.

By HARRY G. STEAD, B.Sc., Diploma in Pedagogy (London).

IN an article entitled, "Analysis of the Spelling Errors of Adults," which appeared in a previous issue of this Journal (June, 1913), it was suggested that it would be advantageous to publish further examples of spelling errors.

The following is a classification of such errors made by the lowest two forms in a Secondary School in the neighbourhood of London. The average age of the lower form, distinguished as Form I, was 10 years, and in this form 237 mistakes, made by 27 boys, were examined. The average age of Form II was 11 years, and here there were 356 mistakes made by 28 boys. In both cases the mistakes were those made by the boys in the course of their usual work during the Christmas term, 1913.

The errors may be first divided under the two main headings, as given by Dr. Rusk, viz. :—

(1) Errors "due to defective capacity for expression."

(2) Errors "due to faulty apprehension."

It would then appear possible to divide the former of these classes into three sub-classes.

(*a*) Mistakes caused by lack of knowledge of the word. The attempts made to spell such words were usually of a phonetic character.

(*b*) Mistakes caused by the use of a better-known homonym.

(*c*) Mistakes due to fatigue, the shifting of attention, or some similar cause. In all the examples of error mentioned below as coming under this heading, care was taken to verify the fact that the child knew the correct form of the word.

The second main class of error (faulty apprehension) may be easily divided into two sub-classes :—

(*a*) Those due to faulty pronunciation, on the part of either the teacher or the pupil. In the present case the error was with the pupil.

(*b*) Those due to faulty visual analysis. When the child had his attention called to the error, he invariably saw his mistake. It would seem that errors under this heading are caused by the child having " known " the words by means of its " dominant " letters.

An analysis of the mistakes made in the two forms resulted in the facts shown by the two subjoined tables. The figures express percentages of the whole number of mistakes.

FORM I.—Average age: 10 years. 237 mistakes by 27 boys. Numbers are expressed as percentages.

FAULTY CAPACITY FOR EXPRESSION.			FAULTY APPREHENSION.	
Word unknown.	Homonym used.	Fatigue, &c.	Faulty Pronunciation.	Faulty Visual Analysis.
50·2	9·3	19·0	18·1	3·4

The corresponding table for Form II was :—

FORM II.—Average age : 11 years. 356 mistakes by 28 boys.

FAULTY CAPACITY FOR EXPRESSION.			FAULTY APPREHENSION.	
Word unknown.	Homonym used.	Fatigue, &c.	Faulty Pronunciation.	Faulty Visual Analysis.
50·3	8·1	13·8	25·3	2·5

The first point to be noticed in these figures is that in the higher form the percentage of errors due to the shifting of attention, faulty visual analysis, and use of better-known homonyms has decreased. This is what one would expect, although the number of mistakes examined is not sufficient for any definite conclusion to be drawn. On the other hand, the percentage of mistakes due to faulty pronunciation *has increased.* This points to a matter which deserves very careful attention. It would seem as if a bad phonetic analysis of the child, applied in a higher form to a wider vocabulary, leads him to more errors. The necessity for insisting upon a clear and accurate pronunciation in the early years of the child's life is plain.

Subjoined are some examples of each class of error abovementioned.

(1) *Due to Faulty Capacity for expression.*

(a) *Word unknown.*

" corse for " coarse "
" enormose " for " enormous "
" antisipate " for " anticipate "
" dencely " for " densely "
" inocent " for " innocent "
" beeks " for " beaks "

(b) *Homonym used.*

" too " for " two "
" their " for " there "
" road " for " rode "

(c) *Shifting Attention, Fatigue, &c.*

(1) *Letter omitted at the end of a word.*

" H " for " He "
" cottag " for " cottage "
" tw " for " two "
" the " for " they "
" pip " for " pipe "
" bee " for " been "

(2) *Letter omitted elsewhere.*

" tird " for " tired "
" qustion " for question "
" anther " for " another "
" tributy " for " tributary "
" eys " for " eyes "
" tring " for " trying "

(3) *Letter added to word.*

" mudd " for " mud "
" mape for " map "
" milke " for " milk "
" deske " for " desk "

(4) *Words ended or begun wrongly.*

“ap” for “at”
“Thereward” for “Hereward”
“hid” for “his”
“end” for “enter”
“wide” for “wild”
“cottgge” for “cottage”

(2) *Due to Faulty Apprehension.*

(*a*) *Faulty pronunciation.*

“impossable” for “impossible”
“presant” for “present”
“necissary” for “necessary”
“farther” for “father”
“dorn” for “dawn”
“carsel” for “castle”
“ornermented” for “ornamented”

(*b*) *Faulty visual analysis.*

(*1*) *Letters misplaced.*

“gohst” for “ghost”
“gaint” for “giant”
“poeple” for “people”
“disgusied” for “disguised”
“salior” for “sailor”
“tierd” for “tired”
“toer” for “tore”
“fier” for “fire”
“siad” for “said”

(*2*) *Letters “doubled.”*

“liuquid” for “liquid”
“smooking” for “smoking”
“folow” for “flow”
“roode” for “rode”
“sturuck” for “struck”
“sipring” for “spring”
“chimmneys” for “chimneys”

In the last two cases the boys who made the errors were asked to write the word down again, *paying special attention to it.* They did not know that they had previously made a mistake, but they invariably wrote it correctly.

BOY LABOUR.

By E. J. W. Jackson, B.A.

Some 450,000 boys leave our elementary schools each year to begin work. On these lads, as the future workmen, depends the material prosperity of society. The period of their lives between the time when they leave school and the age of 20 or 21 is a crucial one, for during it are determined their future places in industry and their value to society. Obviously it should be a time of learning, of preparing for manhood; and yet thousands of lads on entering manhood find themselves unemployed, with no knowledge of any trade, with nothing but their physical strength to offer in the labour market. And many of these industrial “cast-offs” were in Standards VII and ex-VII at school, the shining lights of their classes: they have been industrious, honest and straightforward in their work. Why, then, are they on the “scrap-heap of labour?” This is the problem of boy labour.

In England and Wales there are some million and a half lads between the ages of 14 and 20 constantly moving on and taking their places amongst the adult workers of the country. But though all are of the so-called working class they constitute by no means a homogeneous group. Society is composed of a number of layers, each with its own standard of living and with its own ideals. In the working class itself there are at least three different strata, not rigidly separated, but distinctly recognizable. 1. At the bottom is a huge class of what may be called the "wanderers." They are nearest in character and in civilization to their nomadic forefathers. Amongst them the family is but a loosely organized group, rarely bound by the inconvenient ties of marriage and responsibility to offspring. In times of prosperity its size increases rapidly, but scarcity of food will cause its members to scatter far and wide. The groups, or hunting packs (as they might be called), settle in one district but for a short time, and when they have exhausted all its resources, including the tolerance of their landlords, move on to "pastures new," pay one week's rent again, stay for a month or so and then move on once more. Both men and women take their shares in providing for the household, picking up odd jobs in the streets, lounging round the entrances of railway stations and hotels, begging from passers-by, or, if they are very industrious and have obtained a few shillings as capital, hawking flowers, novelties or fruit in the city streets. The education of their children is invariably neglected, for they are constantly changing schools, and at each change they have a short spell of holiday. Their wandering habits baffle the vigilance of the school attendance officers. 2. In the social class immediately above, we reach a higher stage of civilization. The people are settled on the land, and although they inhabit houses of mean appearance and still meaner proportions, and although there are many crowded together on each acre, they have a kind of affection for their native place. The men are the wage-earners, being low grade workers in the factories and workshops, but in times of scarcity the women will eke out the family incomes by charing, taking in washing, or, in the higher ranks, doing a little knitting and sewing. In the matter of clothes it is the pattern of the cloth rather than the cut of the garment which determines their choice. They buy them ready-made, but new; unlike their brothers a little lower, who beg their clothes or buy them second-hand. In the streets you may distinguish them from the poorer class by the fact that their clothes are not torn, and their scarves are tied more carefully, whilst the more aspiring of them have reached that stage when the neckerchief is being displaced by the collar and tie. The family is a more stable organization, and family pride and jealousy run high. But their higher stage is denoted most of all by their sense of responsibility to the outer world. They *do* pay their rents when thev can. 3. The *third* class includes the high-grade artisan, the clerk and commercial traveller. The houses in which they live are a little larger and better situated, those of the more fortunate people containing baths. At this point they begin to merge into the middle class, which throughout the whole stratum they resemble. At meal-times the table is spread with a white cloth; their window blinds are edged with lace. Their clothes are made to fit them, and great attention is paid to the crease in the trousers. Their collars and cuffs are washed and made to shine at the laundry. In the evenings and on Sundays they must not appear without gloves and cane, nor must they be seen wearing felt hats in the summer.

These are but the outward and visible signs of the different strata of the working class, but they denote inward and spiritual differences, differences in ideals, in methods, and in particular in their conceptions of work.

The boy leaves school when he is 13 or 14, at an age when he is most susceptible to the influences around him. There has just awakened within him a social consciousness, and he is realizing that he has a position in the world to keep up. Hitherto his outlook and his interests have been limited to people of his own age, but now he becomes interested in "grown-ups." He wants to be a "grown-up" himself. It is this new outlook, combined with the restlessness and instability that accompanies its birth, that accounts for the eagerness with which boys look forward to leaving school. Psychologically, this is surely the time for them to begin work.

But, at this time, few lads have any definite tastes, or any ideas of what they would like to be. Nor is it possible for their teachers to say for what they are best fitted. In this condition social environment is bound to exert a great influence on their actions. Few boys actually follow the occupations of their fathers, who, being intimately acquainted with only their own trades, are inclined to think that they are the worst occupations in the world, and to discourage their sons from following in their footsteps.[1] The lads' ideals of work are taken from those around them, from their own social class, and they influence their actions to an enormous degree. In the highest grade it is customary for lads to enter offices, and practically every one who has reached Standard VII becomes an office boy as a matter of course. If they have not reached Standard VII, unable to enter offices, they become errand boys. Even if the idea of entering manual work occurs to them they dismiss it. It would involve their coming home dirty, and from this they shrink. There are lads who have abandoned the idea of becoming draftsmen because part of their training would consist of workshop practice.

Just as the idea of becoming a manual worker rarely occurs to the lad of the highest stratum, so that of becoming an office boy never occurs to the lad in either of the lower strata. Amongst these people the method of finding jobs is different. There is little consultation at home as to what the lad shall do: in fact the conceptions of trade and profession rarely exist among them. There are just "jobs," and one job at 6s. a week is quite as good as another at 6s. There is no looking in the newspapers for vacant posts: the lad turns out into the street, walks about whither his fancy leads him, looking out for notices of "Boy wanted" in shop window and on factory door, and "picks up" the first job that he can get. The lads of the middle grade pick up jobs as factory hands, and errand boys, van boys and messenger boys. Those of the lowest class follow their fathers and become railway touts, newsboys, street orderly boys, hawkers and general cadgers. The kinds of jobs, then, into which lads drift are determined by the social classes in which they live, but except among the office boys, who are all from Standard VII, school attainments count for little.

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[1] This is intended to apply only to large towns having many industries. In centres with only one or two main industries, it is almost impossible for lads to do anything but follow their fathers' trades.

Once in the world of industry a lad's future depends on forces which are beyond his own control. The employer, "freed from all obligations to teach his boys," "and obliged to pay them the full market value of their time, naturally prefers to keep them continuously employed on such routine work as they can best perform." Industries "are therefore sub-divided so that as large a portion as possible shall fall within the competence of boys kept exclusively to one particular task."[1] Boys are in the labour market on the same terms as men. They are employed for their immediate utility, without any consideration of training. Such a bargain is undoubtedly very one-sided. The lads have no knowledge of the industrial world, its possibilities and dangers. Brought up in the atmosphere of a moral school they are inclined to think, if they think at all, that industry and exertion will be rewarded with promotion. How very soon are many of them disillusioned! In four years time very few are in the same places as when they began work. Some are already "despised and rejected" of employers, cast out of industry when their usefulness has come to an end. Others have changed of their own accord.

The lads in the lowest class change most, but, as we have seen, their work is essentially casual in nature, and their whole lives are but series of changes.

Even in the more settled classes above them, however, a great amount of changing takes place. Lads often have four or five jobs during their first four years of industrial life, and it is not very unusual to find lads who have had as many as ten or twelve. But the character of the changes differs fundamentally in the two grades. People in the top stratum think of their work as being in the nature of a trade or profession, and even though their entrance was but the result of chance, they feel that they have been adopted into it. Though they may, and do, change jobs then as often as other lads, they rarely change their occupations, and only after some consideration. The mind of the middle stratum does not get beyond the idea of a job, and sees no difference between changing jobs and changing occupations. Whilst, then, the number of different jobs which lads follow is no greater in one class than in the other, the number of occupations is much greater among lads of the lower stratum.

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[1] Webb's *Industrial Democracy*, p. 482.

This changing is one of the most characteristic features of boys' industrial life; and, since it was first disclosed in connexion with industrial failures, to it have been attributed the evils of economic disaster and moral degradation. But the fact that this changing is common to all, and that after the first four or five years of working life it tends to disappear, seems to point to the belief that it is a natural adolescent phenomenon. The restlessness and instability of this period of life, which in a former age found expression in the escapades of apprentices, now, under new conditions, shows itself in this new form of industrial changing. The desire for change is perhaps intensified by the monotony of the specialized processes which lads are called upon to perform. The motive for changing, where one exists, is invariably the desire for higher wages, and the methods which boys adopt to find jobs are similar to those employed on first leaving school. Lads in the highest stratum answer newspaper advertisements; the others pick up their jobs.

The economic effects of changing vary with the kind of work which the lad performs, and it is necessary to treat each class separately. To begin with that which is almost wholly confined to lads in the highest social class: *Office boys* usually begin at a wage of about 5s. a week in provincial towns, rising steadily by 1s. 6d. or 2s. each year. Their hours are not excessive—from about nine in the morning until six in the evening—and their employment is light. But the prospects vary in different offices. In very large offices the work has been so subdivided that each clerk specializes in one small branch, and rarely gets more than 21s. a week. Some of the simpler processes are performed by boys, so that the firm employs many more lads than they will require as men. To some, then, their employment is a blind alley. When they want more than 16s. a week they will be obliged to go elsewhere. Nor will they have any all-round skill to warrant their obtaining better places. At the other extreme are very small offices where some master does all his own office work, employing one lad to look after the office in his absence, to address envelopes, lick stamps, and run errands. Here the office boy constitutes the whole staff. Promotion is obviously impossible, and the lad learns nothing that will be of value to him in the future. For lads who find themselves in either of the offices just described, to remain at their jobs is to risk finding themselves cast off at the age of 18. Some of the best lads are thus caught. Let me give an example which came under my notice last year. A lad who had been in Standard ex-VII at school, who was remembered with pride by his teachers, and whose work is still shown as a pattern for scholars to copy, went into an office of a large engineering firm on leaving school. He worked diligently, and attended the evening classes. But his employer kept him to one special process, and at the age of 18, when he was earning 17s. a week, he discovered that he would, at his present place, never rise above 22s. a week, nor could he make any change without accepting much lower wages and virtually beginning again. At this time, through illness, his father became unemployed, and the extra responsibility that fell upon the lad prevented him from taking lower wages. Another lad who went into a very small office was turned adrift at the age of 17. Through the influence of a friend, however, he was enabled to enter the tool-making trade, and, though he had to begin again at 6s. a week, he is now much better off. These were two lads who stuck to their jobs. Compare them now with another who changed seven times within four years. Each time he went into an office of a different kind, and obtained in this way considerable experience. He is now a clerk holding a good position under the National Insurance Committee. This lad never went to evening classes.

Another group of lads is composed of the *distributive workers*—errand boys, messenger boys, van boys, newsboys, page boys, &c. The proportion of such boys varies in different districts. In Cambridge, a university town, "between 50 and 60 per cent. of the boys leaving elementary schools became errand boys."[1] In Oldham, a manufacturing town, the percentage is one. In London, 40 per cent. go into transport, and the percentage is almost as high in other ports.[2] The errand boys include many in the top and middle social grade, for the work is quite "respectable." Lads may begin at 5s., 6s., and 7s. a week, but the hours which they have to work are usually longer than those of office boys. They spend their days delivering parcels at our doors, and doing odd jobs in the shops. If they stay at this kind of work they are almost bound to be turned adrift by the age of 18, to give place to younger lads, for their masters cannot pay them above 16s. or 17s. a week. A few may be taken into the shops or the factories. Out of thirty lads, chosen at random, who went to be errand boys, only one was absorbed in this way. He had been a pawnbroker's errand boy, and when he was nearly 18 was taken on as an assistant in the shop. The page boys and "door" boys at hotels and restaurants meet with the same fate as do the errand boys.

The post office messenger boy has an exceedingly respectable job, and consequently often comes from the top social class; but his prospects are poor, though much improved of late. The disclosures of the Poor Law Commissioners led to the appointment of a Standing Committee on Boy Labour in the Post Office, which Committee has just issued its third annual report. In it they show that in 1908-9 there were 4322 boys in the Post Office who had no prospects at the age of 16. In 1912 this number had fallen to 433. This great difference, however, exaggerates the improvement, for the number of lads classed as "resigned" and "discharged" has risen considerably. As a matter of fact, the actual number absorbed in the Post Office was slightly less in 1912 than in 1908-9, and the number who ceased to be messengers was 5,850 as against 7,960.

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[1] Keynes: *Boy Labour in Cambridge*, p. 5.

[2] *Report on the Poor Law Commission, 1909.* Appendix XXII. *Report on Boy Labour*, by Cyril Jackson.

The van boys are drawn from a lower class. Their wages are high—a lad of 14 getting 7s. or 8s. a week. But they work from 60 to 90 hours a week, and often the weary van boy is seen dragging himself home at 11 and 12 o'clock at night. By 8 o'clock in the morning he is on his van again. His duty is to look after the horse in the driver's absence, and to assist in delivering goods. His fate can be read from the figures given by the Departmental Committee on the Hours and Conditions of Employment of Van Boys and Warehouse Boys, whose report has recently been issued. Out of 1,155 boys there were 506 between 14 and 15 years of age, 257 between 15 and 16, 159 between 16 and 17, and only 25 over 17. That is, by the age of 17 practically all who become van boys are thrown off, for few can become van men.

The street traders, including the newsboys, street orderly boys, railway touts, &c., are mostly drawn from the lowest classes, and are their own employers. Their earnings vary considerably, as do their hours, and the work has a demoralizing effect upon them.

All these classes of distributive work are, in their varying degrees, blind alleys. A lad who stays in such work will almost inevitably be discharged by the time that he is 18. The longer he stays at the work the more hopeless his position becomes, and although some who change early happen to pick up jobs that lead to some satisfactory position, the majority have to be content with low-grade jobs as labourers and the like. A clever Standard VII boy who clung to his job was discharged at 18, and had to be thankful for a job as a railway porter. Another lad, who was in Standard VI at the same school, became a van boy, but fortunately for himself was discharged very early, and picked up a job in the brass trade. He changed a dozen times before he was 19, but always in the same trade, and now is a high-grade worker.

We come, then, to *those who enter factories and workshops.* The apprenticeship system is almost dead: neither employers nor lads care for its shackles. But those few who are apprenticed are tolerably certain of learning trades. The mass of lads must learn a trade if they can. One thing is certain, they will not be definitely taught, and any skill they acquire will have to be picked up as they go about their work. The chance of picking up a knowledge of a trade varies with different trades and with different shops. Many lads are employed at simple processes, looking after automatic machines, filing castings, and so on. The work they do can easily be done by lads, and when they want men's wages they will be sent about their business and younger lads taken on. In some shops, however, such work may be probationary, and the lad may be shifted from machine to machine until he becomes a worker of high grade. Everything depends upon the organization of the particular factory, but certain it is that many of these process-workers find themselves unemployed and unskilled at a very early age. Those lads have the best chance of picking up trades whose duty it is to help high-grade workers.

It is obvious that here the question of changing is very complex and uncertain. Lads may have good jobs, or they may be caught up in the industrial machine, and cast aside again as useless. I remember one lad who entered a brass factory in Birmingham as a filer. His work was to file the rough edges of brass castings. He did this for four years for the same firm, and then was told that he could go. For some weeks he was out of employment, but finally got a job as a labourer in a cycle factory—maximum wages 20s. Another boy who had been in Standard VII, and was at one time champion schoolboy swimmer in his town, entered an engineering works. He was put on to a slotting machine, and there remained until, too old for that, he was found an unskilled job. But worse than these is the case of a lad who was smart and bright at school, and held a good position in Standard VII. Five years later he looked a most degraded specimen of humanity, surly and vicious. During those five years he had been sticking labels on to bottles each day from seven o'clock in the morning until six o'clock in the evening.

It is obvious from these few facts that there is a great wastage of boy life. A large proportion of our lads, including many of the best,[1] spend their youth doing work that offers no prospects of a future livelihood, and that may even degrade them. Much of the £25,000,000 that is annually spent on elementary education in this country is thus wasted. The powers that have been developed are allowed to rot. Lads that might have added to the material and spiritual wealth of our country are at the best administering to the lowest industrial needs; at the worst are begging at our doors, filling our workhouses, our prisons and asylums. The prosperity of a country depends upon its having a sufficient supply of well-trained, intelligent and adaptable workers. The present system is not giving us them.

America and Germany have long since applied themselves to the solution of the problem, but England, with whom the evil has existed longest, has not yet awakened to her responsibility. The manufacturers of our own city[2] cry out against foreign competition, but fail to discover the real root of the matter, or to apply themselves to its removal. This, I think, is the only great city in the country which has not a Juvenile Advisory Committee, although rumours of one have been heard. But no tariffs, be they as high as the heavens, can save a nation that is throwing away its youth.

There are some things that we can do by direct action. We have only to carry our own parcels, open our own doors, forego the luxury of having our newspapers delivered each morning, to do away with the need for much boy labour. It should be possible, too, for the city requirements of a whole district to be pooled, and met by a half-daily delivery by van or motor lorry. Two men with a lorry could take the place of a host of boy-workers.

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[1] It is true that the general shifting that takes place favours the sharp boys. Those who rise are of the sharpest, but not all the sharp ones rise. Much depends upon temperament.

[2] This paper was read before the University of Sheffield Sociological Society.

But much of the problem cannot be met in this way, and in general there are three things needed. The first is to change the outlook of the people in the lower grades of society; and this is not a problem for the elementary schools alone, but for the churches and other kindred societies.

The other requisites are guidance and training for our lads. We have attempted to solve the problem of guidance by the establishment of Juvenile Labour Exchanges and Juvenile Advisory Committees, but both are hopelessly inadequate. The Juvenile Labour Exchanges actually send lads into blind-alley jobs. During the four weeks ending with December 12th, no fewer than 2,225 were found places as errand, van, and messenger boys.[1] True, the Exchange officer tells the lads to call again soon, but when once out of the building he has no more control over them. Maybe they wonder mildly why they should be told to throw up a job by the very man who has found it for them, but soon forget all about it, and go whistling to their doom. The Juvenile Advisory Committee goes a step further. It sends some person to visit a boy who is about to leave school, to advise him about his work, and to keep in touch with him. But apparently the most successful visitor is the one who knows least about industrial conditions. As a member of an Advisory Committee, I was, a short time ago, given charge of a lad who had been supervised by one of these successful visitors. When I visited him I found that our friend had obtained for him a job in a tube factory. I was quite certain that the job would lead nowhere, and advised the lad to shun it like the plague. I dilated at length on what we should *not* do, and what he should *not* accept, but, for the life of me, I couldn't tell him what to *do*. And I had just spent a year studying the conditions of boy labour in that district. The general Care Committee helper is all right for making friends of lads, and by his influence helping them to follow in the "straight and narrow way," but his function is not to advise on matters industrial.

We have, as a nation, accepted the principle of regulating the lives of persons who are obviously incapable of looking after themselves. We send the boy to school, though he himself sees no value in it. Throughout his childhood we retain some sort of supervision over him, and yet just at the time when great physical and mental changes are disturbing him, at the time when he is least ready to battle with the world, lawyers begin to class him as "a young person," and society turns him adrift. Surely, to be logical, we must continue our control over him until the time when he can recognize his own *true* interests. And all evidence goes to show that this is rarely before the age of 18.

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[2] *Board of Trade Labour Gazette*, Jan., 1914.

In the olden days both guidance and training were supplied by the system of apprenticeship. But "apprenticeship," says Mr. Tawney,[1] "was developed when industry was stable, methodical, and regular, and is not suited to an age when it is unstable, changing, and irregular. A boy undertakes to serve seven years or five years in order to acquire a trade. But after his skill has been laboriously acquired, it may at any moment be rendered entirely unnecessary by changes in the organization of industry. The greater his skill in one particular class of work the less easy does he find it to take to another. What is required, in addition to manual dexterity, is *general industrial knowledge and intelligence*, which will enable him to adapt himself to changing industrial conditions. But such general adaptability is not given by apprenticeship."

Fortunately, however, the way is opening out. Educationalists are showing us that culture and general development can come from the actual doing of things as well as from the reading of them being done. In fact, they are beginning to discover that after all this doing is the natural approach to general education. And, indeed, essays, written by lads of 14 who have spent two years in a Leeds Preparatory Trade School, compare very favourably with essays which we are accustomed to see from lads of a like age in the ordinary elementary schools. The lads themselves certainly seem happier, and freer in spirit. They work well in groups, and their social spirit is highly developed. This in itself is a gain worth all the cost. What we need is a workshop in every school. Our lads would be better if they were to spend more time in the workshop and less in the classroom.

But we need to go further. The manual training that would be obtained in the primary school workshop would not be sufficient. But it is inexpedient that lads should be kept at school long after they are 14. They must not, on the other hand, be allowed to enter the industrial world too suddenly. We need, then, a new half-time system, which shall last till the age of 18, under which boys shall spend a half of their time in the schools and school workshops, a half in the factories. Germany has something approaching it. "An 'Imperial Law' of 1891 decreed that the masters in any branch of industry were bound to allow their workers under the age of 18 to attend an officially-recognized continuation school . . . for the time fixed as necessary by the authorities,"[2] and the part-time trade schools of Munich have had a great influence on the industrial life of the city. Dr. Kerschensteiner claims that, since their foundation, the number of lads entering low-grade and blind-alley work has decreased considerably.[3] These different kinds of industrial training need correlating, so that all the future workers shall have that knowledge of an industry that modern industrial organization denies them. "A clear knowledge of the principles common to a group of cognate trades is most valuable in giving the power of adaptation from one branch to another which may be needed by changes in industrial conditions and methods of production. It is the ignorance of these fundamental principles that is such an important factor in increasing the number of the unemployed."[1]

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[1] *Economic Journal*, Dec., 1909.

[2] Sadler: *Continuation Schools in England and elsewhere*, p. 527, quoted in *Poor Law Report, 1909*. App. Vol. XXII. *Report on Boy Labour.*

[3] This improvement is partly attributed to the manual training in the primary schools, v. Horsfall: *The Continuation Schools in Munich.*

And, lastly, we need a new apprenticeship system, under which lads shall be apprenticed—not to a master or to a firm, but to the trade as a whole. It is certain that only those can watch over a lad's interests who know the conditions of his trade from within. It is the workers and employers of an industry who must be responsible for the lads entering it. This means that there must be sectional trade committees composed of representative employers, employed, and educationalists, for such a plan of guidance must not be divorced from the scheme of training. It would mean industrial records of lads and periodical surveys. But it should not be impossible for employers and employed to meet thus on common ground. They did so in the glass bottle trade a few years ago when they wanted to keep out a new machine. And this problem is of more vital importance to both than any new machine. Each locality, however, must solve this problem for itself, for conditions vary, and in all cases the first requisite is a thorough investigation into those conditions.

Let me close with a quotation from an article by Mr. Tawney, published in the *Economic Journal* of December, 1909:—

" . . . the years between 14 and 21 must not only pay for the maintenance of the boy during those years, but must prepare for maintaining him in independence in manhood, and if it were possible to imagine some monstrous economic boy, weighing with due deliberation the alternatives open to him on emerging from the 7th Standard, he would undoubtedly reflect that to consider the immediate relative advantages of different trades in respect of hours and wages would be as improvident as it would be for a man who had heavy liabilities to meet ten years hence, to lay aside nothing against them. On the other hand, the adolescent worker is, from the point of view of society, not only the supplier of present wants, but the sole means of supplying future and perhaps more urgent wants: not (like a man) a finished article, but the raw material for other articles. The community which would get the maximum economic satisfaction out of its human material has to take a dynamic and not a static view of adolescent labour . . . ." "It is quite possible for a town or a country, by using its boys to satisfy a passion for evening papers and cheap cartage, to court a shortage of (say) steel workers, or bricklayers, or good citizens, in the future. It is possible for a nation or a city, by employing boys solely with reference to their 'immediate commercial utility,' to live on its human capital."

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[1] Edric Bailey, L.C.C., *Industrial Training in Public Elementary Schools*, p. 4.

THE PLACE AND VALUE OF EXPERIMENTAL PSYCHOLOGY IN A TRAINING COLLEGE COURSE.

AT a meeting of the Teachers Training Association in Cambridge on Saturday, March 21st, a discussion on the Place and Function of Experimental Psychology in a training College course took place. Mr. W. H. WINCH, in opening the discussion, said:—

Profitable research in Education depends on a union of psychological and educational knowledge. James was in error in supposing that the general principles of psychology are all that the teacher requires, though he was right in regarding the minute analysis of sensations, carried out with the aid of complicated apparatus in laboratories, as of little service to him.

Even Science itself is turning away from the doctrine that the known world can be constructed by the summation of the results of victorious analyses; in any case Child-Study necessarily deals with more complex units.

If we reject mere general principles and the mere analysis of sensation we are forced to consider a new course for teachers. First, we shall need some psychological terminology with definition of them obtained inductively from the student's own mental experiences. Great exactitude is not required, and he should not be introduced to current or historical psychological disputes about names. Secondly, he should be taught about the work that has already been done in scientific Child-Study, both physical and mental. Thirdly, he should be introduced to the methods of Experimental Pedagogy by a study of those determinations which have already been made by competent persons concerning school-problems which are of practical importance.

Evidence collected in America shows that teachers are almost unanimously of opinion that psychology, as hitherto taught, has not helped them in their real problems of teaching; corroborative evidence may be found in this country.

School Method and Organization should be taught to teachers by competent psychologists who are also experienced teachers of boys and girls. Finally, persons trained in educational research itself, not in psychology as such, may become available. Such persons will be expensive, as they must have, as it were, a double training.

MR. C. L. BURT said:—

The object of the paper is to emphasize the limitations and the relativity of the value which experimental psychology admittedly has for educational theory and practice.

The value of psychology to education is commonly urged upon the following lines. Education, it is said, consists in stimulating, directing, and supplementing the natural development of the capacities of the mind. The study of mental capacities and their development forms the subject of a specific branch of science, namely, psychology. Hence, to be scientific in theory and efficient in practice, education must be based upon psychology.

There is an important element of truth in this argument. But, as commonly stated, it is misleading. Its natural corollary is the common doctrine that education is but a form of applied psychology. This doctrine the paper controverted at length.

The assumptions implied by the foregoing argument are three. It assumes that psychological knowledge is complete. It assumes that the terms in which that knowledge is formulated mean the same thing in education as they do in psychology. It assumes that the conditions under which that knowledge was obtained are identical with the conditions under which it is to be applied—that the conditions under which mental processes have been observed by the psychologist in his study or laboratory are the same as the conditions under which mental processes are handled by the teacher in the class-room.

Each of these assumptions was discussed in detail; and each, it was contended, was false. Sensation, perception, memory, feeling, thought, interest, and attention—these and other psychological terms mean in the mind of the teacher something quite different to the technical significance given to them in psychology. What a teacher means by attention, for instance, is a concrete and highly complex state whose existence as an unambiguous and elementary process the psychologist denies, but whose nature and significance urgently needs an experimental analysis. Again, the trained subject tested under laboratory conditions has an attitude towards a psychological experiment which is quite different from that of a school-child. The psychologist's "subject" is like the physiologist's "spinal" cat: the interferences occasioned in ordinary life by the higher mental processes are, for the time being at any rate, removed. Most of the problems studied in the laboratory need to be re-investigated under the more natural conditions of the schoolroom. Thirdly, some of the fields of psychology which touch education most closely—the psychology of development, the psychology of the emotions, the psychology of individual differences—these fields have remained till now almost uninvestigated.

Educational problems, therefore, cannot simply be solved by applying to them the generalizations of experimental psychology. We need a new science. Medicine is something more that the mere application of physiological knowledge. Working, not in the physiological laboratory, but in the hospital and by the bedside, the medical man has had to build up an independent science, more direct, more rapid, yet less exact, than physiology, and at the same time quite distinct. Similarly, the educational psychologist, taking, perhaps, his problems from the teacher, and his methods from the laboratory, will have to work out, in the schoolroom, upon the school-child, and under school conditions, a new science, which we may christen, according to our predilections, "educational psychology," "experimental education," or "experimental pedagogy."

Mr. E. O. LEWIS said:—

There seem to be two general aims for a course in Experimental Psychology in a training college, namely:—(1) To give instruction as to the chief facts and principles of child-psychology so that these may be intelligently applied in the students' teaching, and (2) To encourage the students to collect reliable data, which would to a great extent form the basis of experimental research by experts.

It may, with some justice, be urged that in so far as an experiment lacks accuracy of technique, it ceases to be an experiment, and this is one of the most disconcerting considerations that an instructor in Experimental Psychology in a training college has to face. As a rule, the classes are very large, (at any rate, this has been the case hitherto), the accommodation unsatisfactory, the apparatus scarce, and the time still more limited. Notwithstanding these conditions, which seem to make exact experimentation impossible, with foresight and system, an instructor should be able to conduct an experimental course which would serve the practical needs of the young teacher, and would convince him that there is a great mass of demonstrable facts with regard to the child-mind and the processes connected with its development. As long as an experiment yields data which demonstrate the most salient facts with regard to some psychological problem of interest to the teacher, it would justify its inclusion in the course. Very little apparatus is required to enable a class of teachers to ascertain for themselves the chief facts with regard to the problem of sectional and entire methods of memorizing, and it would be unnecessary to employ the elaborate apparatus and accurate methods which would be expected in a more academic course of Experimental Psychology.

To come to the experimental course itself, it is obvious that an experiment generally fulfils one of two functions. It either demonstrates a conclusion already arrived at theoretically, or solves a problem. From the standpoint of instruction, the latter seems to be the more important function. There is, however, a tendency for a course of experiments designed to supply data with regard to a number of specific problems to be somewhat fragmentary in character. The success of a course in Experimental Psychology in a training college depends upon the choice of those problems the investigation of which will give results of vital importance to the teacher, and will stimulate discussions of a comprehensive character. Experiments dealing with such subjects as Weber's law, peripheral vision, cutaneous spots, and discrimination of pressure, notwithstanding their importance from a purely scientific standpoint, would not be as likely to give rise to such profitable discussions with a class of teachers as experiments dealing with the most economical methods of learning, the making and breaking of habits, types of imagery, the range and fluctuations of attention, tests of intelligence, fatigue, and certain psychological problems presented in the learning of the chief school subjects, e.g., rapidity in reading, writing, and arithmetic. A comparison of these two lists of experiments may give the impression that we suggest that the branch of Experimental Psychology which deals with "sensations" has no place in the training college course, but such is not the case. Experiments for testing the discriminative powers of the senses, and those dealing with colour sensations, colour-blindness, and the kinæsthetic sensations, are of considerable interest to the teacher. Not infrequently, however, these topics are dealt with by the lecturers on Hygiene. Probably their more natural setting would be in the psychology course, and students would be likely to appreciate more fully the educational significance of these facts if learnt in this connexion.

The type of experimental work that can be done with limited apparatus and with very little modification of the conditions existing in most of the training colleges, is splendidly indicated in Professor Seashore's little manual, "Elementary Experiments in Psychology."[1] It is the method of experimentation rather than the problems dealt with in this manual which makes it of interest to the instructor in a training college. The book, whilst it encourages right procedure, assumes no previous technical training on the part of the student.

It is when the student sees or performs experiments with children that the greatest value of the course becomes apparent. The instructor should give demonstrations of experiments with individual children and with whole classes. A very different idea of the Binet tests of intelligence is obtained after observing their application by a person who has had considerable experience in experimenting with children from that obtained by simply reading an account of the tests in a text book. Even if such demonstrations were only to convince the novice of the difficulty of reliable experimentation with children, some good would be achieved. During the latter part of the course, the students, under the supervision of the instructor, should repeat some standard experiments with children. Students training for posts in Secondary Schools, who generally specialize in the teaching of a certain group of subjects, should be allowed to investigate problems bearing directly upon their special subjects. In colleges where the teaching practice is postponed towards the end of the course of training, it has been found possible to get each student to make a careful study of some one child in the class he is teaching, and prepare a record of the child's physical and mental characteristics. The general features of these individual records are then discussed by the whole class of students, which tends to obviate any undue generalization.

Mr. CHARLES FOX said:—

No question concerning the curriculum of a training college can be adequately considered in isolation from the general aim of training. The topic discussed in this paper is subsidiary to the general theme of the relation of experimental psychology to the training of teachers, which is dealt with by the other papers. A brief reference to a more general subject is necessary, however, in order to understand the purpose of the course which is given in outline below.

The student in training very soon learns the elementary fact that education includes much more than instruction, and yet the question of the value of psychology to education is frequently confused with the totally different one of its value to teaching. Whether the study of psychology, experimental or otherwise, possesses any direct value at all as an instrument for teaching is, at all events in the present state of our knowledge, a matter for discussion. It may be maintained with much plausibility that Theory of Knowledge is a much more useful instrument in the hands of the teacher in such subjects, for example, as mechanics, elementary chemistry, geometry, &c. As much of what passes for psychology in educational literature is really disguised metaphysics, the above confusion is inevitable. Experimental psychology, then, is not directly convertible into teaching method. Its utility, at present, is mainly indirect. No study of conscious or sub-conscious mental processes can fail to be of some guidance to those whose task it is to educate youthful minds, though the help given is largely of a negative kind. If a schoolmaster who has had some training in experimental methods is told, as some were told recently by a psychologist, that just as there are boys who cannot learn music because they have no "ear" so there are others who cannot be taught to draw because they have no motor imagery, he would be prompted to ask several pertinent questions which otherwise would probably not occur to him. In the first place he would enquire whether the two things are on a par, whether the lack of ability to learn music is due to lack of auditory tone imagery, whether the ability to draw has anything to do with motor imagery, whether there is any reason to suppose that any person is lacking in these kinds of imagery, or whether all the supposed cases of "types" of mental imagery are not the result of use and education. And the only way of settling any of these questions would be by direct experiment. The teacher, as a rule, in his professional work will have neither the time nor the opportunity to carry out any of the experiments, and he must therefore rely largely on the results obtained by others. It is to enable him to interpret such results that an experimental course finds a chief justification in a training college curriculum. Or, take such a topic as the training of the imagination. To minds "debauched by psychological learning" the imagination is often confounded with the existence and use of mental imagery. Thus James in his *Principles* says, "When the mental pictures are of data freely combined, and reproducing no past combination exactly, we have acts of imagination properly so called." This identification of the act of imagination with a small part of its material content would never occur to the naïve imagination of a student in training before it was corrupted by a course of psychology; for the above is certainly not the imagination that we desire to cultivate, or that distinguishes creative artists. A course in experimental psychology, which includes the investigation of mental imagery and of thought without images, will inevitably lead to a psychological enquiry into the connexion between imagery and imagination and to the pedagogical question of the function of mental imagery in the appreciation of imaginative literature.

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[1] Published by Henry Holt & Co., New York, and sold in England by Messrs. George Bell & Sons.

Such was the actual result of the course in experimental work begun last year by the secondary students of the Cambridge University Training College for schoolmasters, at the Cambridge Psychological Laboratory. Shortly after the experiments on imagery, one of the students, Mr. E. A. Peers, was prompted to undertake an investigation into the use of mental imagery in the appreciation of imaginative literature in the case of schoolboys. The results appeared in the last two numbers of this Journal, and open up a fruitful field for further enquiry. Another student of the same year has prosecuted an enquiry into the suggestibility of school children of different ages and different kinds of schools, being led thereto directly by the experiments on suggestion which formed part of the course. Another important subject which requires investigation for educational purposes will, I hope, be undertaken by one of the present students, namely, how far a knowledge of detail aids or hinders the development of æsthetic appreciation. This question directly arises from one of the experiments of the course.

It appears, then, if these results are typical, that a course in experimental psychology is a useful stimulus for the beginning of experimental pedagogical research ; and in any case it is an indispensable part of the student's equipment for such work. Without it the work would be unscientific, and consequently valueless.

Besides serving this purpose, such a course plays an important part in enabling the student to analyse certain educational questions which otherwise would be insoluble merely on general pedagogical grounds. If we consider the question of the transference of training on general grounds, no answer, one way or the other, seems possible. Those who think that theory is analysed practice must have considerable cause for astonishment when they consider that the universal practice of schools and the universal experience of teachers have done so little to clear up the fundamental question of the practice of education—whether the effects of practice can be carried over. The difficulty is that every bit of personal experience can be contradicted by a single example of personal experience quoted on the other side. There is a general concensus of opinion that this question can only be considered by experimenting on very simple material, and using the results to analyse the question into its various factors. The first-fruits of such experiment so far carried on are to clear the question of ambiguity. A very simple experiment can be devised to illustrate the points at issue, and students can get a useful knowledge of the subject by a week's practice of one half-hour per day. The experiment selected is to estimate the length of a line, and then to practice for a week on estimating the size of angles, then finally to estimate the length of the line again. A student who has performed this experiment is in a position to understand and evaluate the recent work on the subject ; otherwise it is not completely intelligible to him.

With these considerations in view, Dr. C. S. Myers and I have arranged the following course, which can be completed in two terms, giving one afternoon each week to the work. The course can be easily covered in the time, provided that the whole afternoon is given to the subject. By this method the first term is devoted entirely to lectures on the general subject of educational psychology, for without this groundwork the course is meaningless ; and the lectures are continued throughout the second term, in which the experimental course begins. Thus, a whole term's lectures precede the practical course. It has been found advisable, in addition to the ordinary lectures, to start the experimental afternoons with a short lecture and discussion of results.

The course as given previously is in process of revision, but the following topics will remain as parts of the revised scheme :—

(1) Experiment on the process of acquiring a habit of skill. This is done by means of mirror drawings, and an attempt is made to obtain a "coefficient of facility" depending on time and accuracy.

(2) Study of a habit of thought. Fifty multiplication sums are worked in the ordinary scale, and then 200 in the scale of 9, finally 50 in the ordinary scale again. The scale of 12 which was originally chosen is unsuitable, as some students work these in terms of shillings and pence.

(3) A study of "observation." The object of this is to discover the precise difference made in observation by a preliminary detailed knowledge of what one is about to observe.

(4) Mental "imagery," tested by exhibiting cards of letters which are learnt (*a*) by sight alone, the tongue being held between the teeth ; (*b*) by sight and articulation ; (*c*) by hearing them alone. Marks are assigned.

(5) Mental imagery by a "questionnaire." The questions are selected in equal numbers to discover visual, auditory, motor imagery, and the remaining varieties by a lesser number of questions. By means of a key, marks are assigned to the various grades of imagery. These results are then correlated with those in (4) the learning in which does not depend primarily on imagery ; but (4) is retained so as to provide a simple exercise in correlation.

(6) Association and memory experiments. Series of nonsense syllables are learnt in the usual way, and the times and number of repetitions are compared with the times and repetitions required to learn lines of poetry.

(7). Relearning of the previous week's nonsense syllables. A comparison of the "entire" and "sectional" methods used in learning selected passages of approximate equal difficulty from "Paradise Lost."

(8) Experiments on suggestion by lines of varying length and on suggestion by heat. These again provide useful material for using correlation formulæ, in addition to being valuable in themselves.

(9) Association times with a demonstration of Hipp's chronoscope.

(10) Fatigue and Practice. The work curve obtained by adding figures and erasing letters.

(11) Demonstration of the ergograph.

(12) Experiments on sensory acuity and on colour blindness.

(13) The transfer of training; in addition to its intrinsic educational value this provides a good example in the use of the limiting method.

Professor J. A. GREEN said :—

THE question raised can hardly be answered without considering what we mean by a theory of education, and the relation it has to practice. It is not so very long ago when writers on the subject spent much time in discussing such questions as whether or not education was possible, and, assuming its possibility, what it was exactly which the process aimed at, but to judge from the more recent books on the subject, the point of view has entirely changed. Like the physicist who has no patience with the philosopher who challenges his tools and his assumptions, we seem to have largely abandoned enquiries of this kind as idle or as too remote from the immediate business of persons concerned in an educative process-in-being. In so far as we try at all to explain that process, we do it from the biological standpoint. We try nowadays to estimate the actual forces—inherited, and environmental—which are at work in the making of men, what the nature of these forces is, the way in which they interact, and this, in the main, is the stuff from which our educational theory is built up.

From such a standpoint it is clear that psychology is of enormous importance. The folk who are being educated are, at least, potential mind-forces, they are, each of them, complexes of developing purpose. They are surrounded by other spiritual forces of like character, and willy-nilly they employ a spiritual process in the interpretation of the impressions they receive from the physical world. The action and reaction between mind and mind, and between mind and thing produce recognizable results upon the individuals themselves which we call character. This process is always going on with or without the schoolmaster, and the theory of education has come to be primarily a study of that process. At least this is, and must always be, the future basis of such a theory, for there still remains to the theory such questions as how these biological factors—I call them biological because after all psychology is only a branch of biology—may be most adequately recognized in the organization of school life.

The biological conception has then made the position of psychology paramount in the actual theory of education. This is, of course, not the same thing as saying that a sound knowledge of general psychology is an essential precedent to the study of education. There is such a thing as descriptive pedagogy which has a value of its own even for those who have not read any psychology. Even books of some importance from the theoretical point of view show a certain independence. A student may profitably read a book like Horne's *Idealism in Education*, or Bagley's *Educative Process*, without being in any sense acquainted with academic psychology, and *The Montessori Method* has been read by thousands who have at most but a passing acquaintance with James' *Talks to Teachers*.

Though we must recognize the fundamental position of psychology, pedagogy has an independence of its own. Its problems are peculiar to itself. They arise in a fairly well-defined world of activity, and much that is of interest and importance to the psychologist has at present no obvious bearing upon a theory of education. The psychologist as such pursues knowledge for its own sake. He is entirely disinterested in the matter of possible practical application. But educational theory must keep in the forefront of its thought, an actual process which must go on whether the theorist is there or not. The teacher is as necessary nowadays as the farmer and both will do their work with or without such guidance as theory can furnish. Educational theory may be based upon psychology, but it must be a psychology which has ceased to be purely academic and complete. It must be a psychology which deals with school situations as they are or as they might be; it must be selective, and it must be principally genetic.

The schoolmaster may expect the psychologist to help him to understand the reading and reckoning processes, the relation of doing to thinking, the formation of habits, the learning process, conditions favouring active attention, why some children spell correctly and others do not, how ideals develop, how initiative is often lost, &c. He pricks up his ears, too, when we talk about tests of intelligence. But he is not much interested in the psychology of sensation nor in fundamental questions like those of the perception of space and of things. He will in fact select from the psychology which is available, just those parts of it which illuminate his work and offer him criteria by which to test the soundness of the method he is adopting in order to achieve a particular result.

Another type of difficulty in particular which leads thoughtful teachers to fall back upon psychology is that which is caused by the differences between children. As a help in the diagnosis of extraordinary situations—obtuseness, mental deficiency, temperamental differences, differences in individual performance and differences in the performances of the same individual when engaged upon different subjects, he looks to psychology for help. These are familiar difficulties to every teacher and they are met as a rule in the roughest possible way. The methods of the steam-roller which smoothes the surface of our roads by its enormous weight are the nearest analogy. We know, of course, that smoothness of this kind does not last long even in a road where it is highly desirable, and Road Boards are appealing to geologists for more light upon the problem. Inversely, the modern theory of education is urging that the crushing method is not a desirable feature in classroom discipline, and teachers are asked to regard their pupils as persons, to try to understand them, and to give them elbow-room. In such a situation, psychological training and psychological insight is obviously invaluable.

Such, in brief, seems to me the kind of service which psychology can render to the theory and practice of education. How far experimental work is essential to the subject seems to depend on our view of how far it is necessary to an understanding knowledge of psychology. After all, one may read and enjoy James without it, and if I had to choose between a student reading the last edition of Stout, and the volumes of Titchener, or even of Dr. Myers, on experimental psychology, I should not hesitate in my preference for Stout. The difficulty seems to be in the fact that some training in systematic introspection is essential to practical work. I have found the difficulty almost insuperable when trying in a tentative way to introduce students to some experimental work when they were unfamiliar with the outlines of the subject as ordinarily presented. So far as English textbooks are evidence, the possibility of teaching psychology as a practical science, like physics, or chemistry, has not yet been solved. Thus, for the study of the theory of education, systematized practical work is, *as a rule*, not practicable.

But, on the other hand, the student who is beyond the elementary stage, can hardly do without, at any rate, the results of experimental investigations. He has not, usually, time to make them for himself, or even to repeat what others have done. A single investigation may take months of hard work, and conditions are so complex that we cannot in many cases give a student an experiment as an exercise to work through, in which he may expect to achieve something near to a result which is given as a norm.

This, of course, does not preclude illustrative or demonstrational experiments which, incidentally in his course, the lecturer gives or inspires. We may demonstrate experimentally, individual differences in reaction time, in immediate memory, in suggestibility, and in imagery, and even organize an illustrative laboratory course of that kind, but this is, in relation to a systematic training in experimental psychology, something like "Nature Study" is to Botany, or Zoology, or Geology, as the case may be.

But illustrative work of this kind has great value in enabling the student to understand something of the nature of psychological experiment, and to the teacher it may well serve as an introduction to the systematic study of his classroom experiences. Most classroom work is at present a struggle with forces the teacher does not understand, or even care to understand. Even so simple a matter as a scale of marks bristles with difficulties of which the rough and ready methods of most teachers are quite unconscious. They compare methods, results, and individuals, in the crudest way; if it were only to give some insight into the method of attack in such problems, a little experimental work would be useful. An Arts student in particular actually needs to learn the very nature of an experiment, and, as so much of his teaching work is rather adventurous than experimental, unless it is unreflectingly imitative, it would be a professional advantage if he had some introduction to the methods of scientific enquiry in this particular field.

EDUCATIONAL RESEARCH.

WHO IS TO UNDERTAKE IT?

By M. Jane Reaney, B.Sc.

THE Science of Education,—does it exist? Is the Art of Education based on it? These are questions which are occupying the minds, not only of educational experts, but of many thinkers of the day.

We still have the echo of the British Association in our ears, and the fact that "Education" entered the field side by side with other well-established Sciences in the recent meeting of this great Association goes far to answer the first of these questions. If it be admitted that there certainly is a Science of Education, then the further query arises—"Is this science well established or is it still in its infancy?"

The rapid strides which have been made in Experimental Psychology during recent years, and the large number of subjects bearing on education which the Psychologist has tackled, but bring to light the vastness of the whole subject, and leave those of us who watch the movements of the times with many heart searchings.

Are we carrying out the Art of Education on the lines indicated by the Science? Are we employing the valuable time of the child to the best advantage? Are we preparing him for life? On all sides these questions are being asked, and the answers are still to be sought.

Most educationists will agree that on the whole our methods are too formal, too far removed from real life. The shadow of the Schoolmen still lies darkly upon us, although valiant attempts are already being made to disperse it.

As a result of discoveries due to Experimental Psychology, many of our most cherished theories are being shaken. The doctrine of Formal Training, on which a large percentage of our educational method is based, is tottering. Already, researches on the question of mental and physical fatigue have shown that these are one and the same thing. Gymnastics have been proved to stand highest amongst the subjects involving a large amount of mental fatigue, and thus can never again be used as a relaxation. Investigation on Reading and Writing have brought to light many points which will have far-reaching effects upon the teaching of these subjects.

Much has been done but much more remains to be done, and it requires little stretch of imagination to realize the enormous field which lies before those who undertake research work in education. The need for it is pressing. Interest in education has been aroused at last in the country, though the man in the street, unlike his confrère in other countries, still regards it as a somewhat unnecessary luxury. But the spirit of discontent is abroad; on all sides we hear its murmurings. The products of the elementary school are often turned out untrained and unfit for anything except dissatisfaction with their lot. The child who has gone on to the Secondary School leaves with a bias towards clerical work as the only kind of work for which he has some slight training. The cry for vocational training is becoming louder as the great army of unskilled labour increases. Schemes are tried and abandoned. Thoughtful people are racking their brains to find solution for the difficulties, and many an earnest teacher is still following methods he has ceased to believe in because he can find no other.

The great advance in biological knowledge has brought us face to face with the necessity for studying the epochs of growth, the stages of child development, the problem of the adolescent, the culture periods, the influence of hand work on brain growth, the training power of various subjects, types of memory, discipline, training of will power. These are but a few of the vast army of subjects which up to the present have been attacked, for the most part empirically, but which must be studied from the standpoint of Psychology, Biology and the other kindred sciences which have during recent years brought so much to light on Man—the thinking animal.

As a result of the great changes in social development, the Art of Education seems in a chaotic state. We are waiting for the Science to tell us what to do, but on many points we have but silence, and the doctrine of *laissez-aller* still stands. The only hope of improving the present state of affairs is to establish a Science of Education on a sound basis, and this can only be done by careful research work on the development and needs of the child carried on on lines set out for us by Psychological research. In other words, the real hope of Education lies in Educational research. But who is to undertake this work? Up to the present time the trained Psychologist has, with few exceptions, been the only one to attempt it. On one side he is thoroughly equipped for the work, but he labours under a heavy handicap. In most cases his training is purely academic; he has never taught children and has little experience of the dangers and difficulties of teaching. In conducting his experiments he is further handicapped by the fact that if he does the work himself, the children are for him an unknown quantity, and if he asks the assistance of the teacher he has to depend often on one lacking in scientific knowledge.

All this points but to one solution. The experts to deal with educational research must be of two kinds: the trained Psychologist with his knowledge of the subject; the teacher with his knowledge of the child. In these rare cases where the Psychologist is a teacher, or the teacher has an expert knowledge of Psychology, the conditions are of course ideal, but at present such cases are the exception and not the rule.

But the teacher is handicapped even more strongly than the Psychologist by lack of time. The minute, thorough, steady investigation, often covering long periods, cannot be undertaken in odd moments at the end of the day after long school hours. Nor can it be done well by those engaged in a profession which requires more nerve strain than almost any other. Here and there one meets with teachers who, in addition to their ordinary school duties, undertake the further burden of research, but it is a labour of Hercules, and means the cancelling of all social engagements, and often a shortening of the necessary hours of sleep. It can only be successfully carried through by those who are capable of sustaining prolonged nervous strain, and who are stimulated by strong enthusiasm for the cause.

Again, even if the teacher is willing to give up teaching and undertake research work, he is handicapped by lack of funds. The teaching profession is badly paid, the majority of those who are engaged in it are dependent on their earnings for a livelihood, and many have other claims upon them.

Teachers, as a class, are keen on the theory of their work, and I believe many a one after ten or twelve years experience, finding out for himself problems which he would fain solve, would be willing and eager to devote himself for a period to the study of such problems. But he dare not leave his post. His very experience which is an essential for research work carries with it middle age, and the middle-aged teacher once out of the line finds it hard to get in again. There are no paid posts for such work, and few could stand the monetary loss entailed in giving up paid for unpaid labour. The expenses connected with such work are often great, so the project is looked upon as an impossible one. We are therefore faced with the following facts: There is discontent on all sides as to methods of education now in vogue.

Investigations already carried out have shown by their results that far reaching research is necessary in the development of the child and the effect of the school upon him to enable him to take his place in the world.

The people most competent to undertake such research with the help of the Psychologist are the teachers. These are handicapped to such an extent by lack of time and money that at present the work can but progress slowly. Meanwhile, much valuable time and mind stuff is being lost by lack of knowledge. Surely there is some solution for this state of affairs?

It is not within the scope of this article to lay down the law as to the method of this solution, but the lines upon which it may be worked can be suggested. If public opinion is once roused to the necessity of research work in education, public funds will soon be available for the remedy of the existing evil, and the means will be forthcoming which will make it possible for the teacher willing to devote himself to this research work to do so. Would it not be of value if some at least of the money now devoted to scholarships for passing children from one type of school to another were given for this purpose? Surely it is important to find out whether the education we are offering the child is what he wants before providing him with means to avail himself of it.

Facilities for educational research work might be given in at least three directions:—

(1) By grants of money to enable duly qualified teachers to take a given time from their teaching work to devote to a definite piece of research.

(2) By the formation of half-time posts where the experienced teacher, on full pay, might avail himself of the benefit of being in touch with his school, but at the same time have leisure to carry on his research work.

(3) By the institution of scholarships for trained and experienced teachers in connexion with the Psychological or Pedagogical laboratories of the Universities, which should enable them to devote themselves entirely to the work of research under the supervision of the head of the Department.

If the funds were at hand, and if the means were assured, I believe it would not be long before a trained body of experts, fully equipped with knowledge drawn from direct dealing with children, would be available to pursue the work which is so urgently needed, and we should then be nearer to the solution of the problem that is puzzling many a one anxious for the good of the nation—What is education? Are we educating our children?

*REVIEWS AND NOTICES OF BOOKS.

Obliviscence and Reminiscence, by P. B. Ballard, M.A. (Monograph Supplement, No. II, of the British Journal of Psychology). Cambridge University Press. 4/- net.

MR. BALLARD is already well known to readers of this Journal for his interesting and valuable researches into educational problems and to a wider circle of teachers for his volume on *Handwork as an Educational Medium*. This recently published work takes rank at once as his most important contribution to educational as well as to psychological theory. It is almost entirely the outcome of experiments carried on in London schools, and is therefore an excellent example of the service which may be done to psychological theory by the careful examination of classroom phenomena by men who have the necessary scientific equipment.

Work of this kind involves two distinct steps—first the accurate determination of facts, and second their explanation. It might be supposed that all the facts worth knowing about the reaction of children to their lessons were already familiar to every teacher of experience. This is indeed the common view in the profession itself, which as yet shows little interest in research. Probably the contrary is really the case—that all or nearly all the facts in question which are of first-rate importance have yet to be found out. Here, at any rate, is a fact which Mr. Ballard has established by a laborious investigation, which is as interesting as it is important. Let a class of children of twelve learn as much of a short poem (*The Wreck of the Hesperus*, shall we say) as they can in a quarter of an hour; now let them write out as many lines of it as they can remember. Leave it for a couple of days and let them write what they can recall once again, but without seeing it for revision. If the result of the first test is now compared with that of the second most teachers would be astounded to find that, in the aggregate, a considerable improvement would be shown, that is, more lines would be correctly written out after two days interval than were reproduced immediately after the learning had taken place. Analysis of the results would show that most of the pupils do not reproduce *all* the lines they gave in the first test, though they actually score a larger total of correct lines. This revival of lines that refused to be recalled in the first instance is a typical example of what Mr. Ballard means by *Reminiscence*, and his monograph is chiefly devoted to the detailed examination of this phenomenon, and the various possible explanations.

Amongst his results we may note the following:—

1. The amount of improvement is largely dependent on the poem. The more comprehensible and interesting it is to the children, the greater the improvement, though improvement actually takes place if what is learned is alliterative or rhythmical nonsense.

2. The amount of improvement again varies with age. Children of six improve from 50 to 60 per cent. in two days, children of twelve from 10 to 20 per cent. on the average. Individuals differ enormously. Put in another way, 90 per cent. of the infants improve, 75 per cent. of the older children. Students in Training College did not improve on the average, but 30 per cent. of the individuals did, many therefore actually lost.

3. Reproduction after the interval takes less time.

4. Reminiscence (v. supra), measured by the absolute number of lines recovered increases up to adolescence, and then gradually diminishes. Such reminiscence is ordinarily at its maximum after two days.

5. Generally speaking, among children of the same age, the more intelligent learn faster, retain better and recover more than the less intelligent. But the less intelligent show a higher *percentage* of recovery than the more intelligent, i.e., when the lines recovered are compared with the lines originally reproduced.

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* The notice of certain mathematical books on page 307 of the March number of the *Journal* was written by Professor T. P. Nunn, and not by Miss Bone, whose name appears inadvertently at the foot.

In examining the various possible explanations, Mr. Ballard favours the theory of neural growth as best fitting the facts. "Reminiscence may be said to be due to the inertia of the nervous system, which does not yield to an influence at once."

It is impossible to do justice to these closely reasoned pages in a notice of this kind. One may hope that the Monograph will find a place in all Training College Libraries, and that it will serve as an inspiration and an example of the type of work which may be done in that excellent psychological laboratory, the school class-room, especially by co-operative and well directed effort.

J. A. G.

A New Discovery of the Old Art of Teaching Schoole, In four small Treatises. By Charles Hoole. Edited with Bibliographical Index by E. T. Campagnac. Liverpool, The University Press. (pp. 16+xxiv+41+357).

ALL who care for school education, whether historically or practically, should welcome this very charming reproduction of one of the best books on the schoolmaster's art which the seventeenth century produced. Students of the history will be grateful, too, to Professor Campagnac for the bibliography of forty pages of books on school work issued mainly in the sixteenth and seventeenth centuries, even if they be somewhat appalled by the amount of material to be sifted. They will hope that the books of Brinsley and Dury will soon follow this of Hoole, and feel that a new reprint of both of Mulcaster's books is also needed. As Professor Campagnac says in his Introductory Note, "Until the documents are collected and presented in a convenient form it will be impossible to write and idle to guess at the history of teaching."

Hoole's book gives us an exact and detailed account of how he himself taught and managed his boys, and it throws much light—more or less incidentally—on the defects of English schools at the time, which he regarded as greater than those of continental schools. Hoole desiderates a sufficient supply of English preparatory or elementary schools, a better provision of buildings for grammar schools, an increase in the staff beyond the accepted master and usher, and a salary for masters sufficient to attract suitable men to schoolmastering as a permanent profession. More than two and a half centuries after he wrote we are still waiting for the last desire to be fulfilled. Indeed, as Mulcaster had made the same recommendations before the close of the sixteenth century, it cannot be well maintained that England's scholastic advance has been altogether breathless.

Of course, Hoole's curriculum was the established classical course, though both Greek and Hebrew were added to Latin. Teachers of classics might do worse than study the method this skilled practitioner sets forth. Granting that boys wanted to learn Latin, there is no reason for doubting that it succeeded as well as Hoole claimed it did—that is, that boys were ready to enter the University at sixteen or seventeen able to read, write, and speak Latin and Greek, and with some knowledge of Hebrew. The insistence on talking in the language studied, and the varied measures taken to train this power, are worthy of special remark. So is the care given to the cultivation of similar powers in English. Such a method is, at least, more likely to evoke a desire for the classical languages in the youthful breast than the hideous book-teaching of a "dead" language, mainly due to the inertia and incompetence of the schoolmesters of that Dead Sea of Education—the eighteenth century.

Much that Hoole says on Discipline is of permanent value, and shows a man at once kindly and shrewd—one who was careful to mark what was done amiss, but who was not extreme in marking the delinquent—in both which points he is the antithesis of the incompetent teacher of all times.

One could linger for hours over this old professional brother, but it is better to say no more, and to urge all our readers to get the book for themselves. They will surely thank us for the recommendation.

When a second edition is called for we think it would be well to prefix a brief life of Hoole ; the biographical details on p. 330 are too meagre, and being rather hidden in the Bibliography may easily escape attention.

J. WELTON.

Education and the New Utilitarianism, and other Educational Addresses, by Alexander Darroch (vii + 169 pp), Longmans, Green & Co. 3s. 6d. net.

Most of us know only too well that the manuscripts of educational addresses generally find their fittest resting place in the pigeon hole or the dust bin, but this rule does not apply to the lectures included in this book. Prof. Darroch's thoughts on various questions of contemporary interest deserve a wider public than the one which listened to the lectures. Thus the chapters on Democracy and Education, and on the School and the State, give us some timely criticism of the vague assumptions which underlie much current theorizing on educational politics, while the chapters dealing with the education of women, emphasize the value of higher education for girls as one line of advance towards "a higher type of society, and a higher ideal and unity of the married life."

The special virtue of the book, however, is that it is one of the few recent books on education which base their recommendations upon definitely stated general principles. We are apt to forget that educational theory must grow downwards as well as upwards, and that a consistent policy must be founded, consciously or unconsciously, upon the acceptance of some more or less coherent view of life. We can, therefore, heartily welcome Prof. Darroch's attempt to view educational questions in the light of a particular philosophy. He is a follower of pragmatism, and in his first chapter he gives us a brief sketch of that philosophy; his succeeding chapters exemplify the educational significance of pragmatic principles.

But while we may be grateful to Prof. Darroch for what he has given us, we cannot, I think, but regret that he has not given us more. The logical structure of the separate lectures is disappointing when compared with the excellence of the general plan. The address on "Is a Science of Education possible?" may be instanced as a case in point; in spite of several interesting observations it is singularly inconclusive, and its last sentence is hardly in accord with the argument as a whole. Again, Prof. Darroch sometimes commits himself to statements which appear to need more explanation than he offers. Thus, on p. 3, Bergson, Croce, Schiller, James, and Dewey are mentioned as exponents of the pragmatic spirit which, we have just been told, has been embodied in a definite system of philosophy. Surely this gives the impression that the philosophies of, say, Croce, Bergson, and Dewey are much more closely related than is actually the case. Again, I confess myself unable to follow the reasoning of the passage (p. 4) in which it is argued that if truth or knowledge once discovered were for ever valid "there could be no real progress in the world, for then, the only intelligible meaning of progress would consist in man's coming to know better an unchangeable and eternal universe," and our ideal must be a life of unpractical contemplation. This seems to me to be a caricature of the idealist position, whether represented by Plato or by Bosanquet. Similarly, the account of the teacher's moral influence (p. 63) appears to be misleading and unreal. This lack of care in working out the arguments seriously diminishes, though it does not destroy, the value of the book.

Mr. Harrold Johnson is twice (pp. 51 & 57) given an additional *t* to compensate him for the deprivation of an *r*.

H. BOMPAS SMITH.

From Locke to Montessori: A Critical Account of the Montessori Point of View. By Wm. Boyd, M.A., B.Sc., D. Phil. (271 pp.) Harrap & Co. 2/6 net.

BOOKS dealing with Signora Montessori's plans for education are justified by the amount of attention those plans are receiving. Dr. Boyd tells us that the continued testing of her methods is made possible by "the financial aid of the Montessori Society of the United Kingdom" (p. 134), so that the interest excited in England and Scotland is evidently of a practical character. The question whether this zeal is according to knowledge is the one raised in this book, and the answer is a pretty decided negative. The keynote is struck in the Introduction: "Any effective criticism of Montessori and her methods must . . . in the long run direct itself to her fundamental ideas" (p. 17). This is rendered the more difficult because Dr. Montessori explicitly disclaims that her system is based on a philosophy of life, and gives force to this by a copious inconsistency. Yet, of course, such ideas are implicit, and whether Montessori recognizes their presence or not they must be brought into the light of day and submitted to criticism. For on them must depend the judgment pronounced on this 'new' educational evangel.

Dr. Boyd's book consists of three parts. In the first he considers the genesis of the system; in the second he briefly describes it; in the third he submits it to adverse criticism. In the first we have accounts of Locke, Cardillac, Pereira, Rousseau, Itard, and Seguin. Of these the two latter will be the most welcome, as the work of Itard and Seguin is not well known, and accounts of it not easily available. The others are not needed by those who know the writers, and are too meagre to be of much service to those who do not. The same criticism may be made of the account of Montessori's own work in chapter VII.

Montessori often expresses her obligations to Itard and Seguin. But Dr. Boyd tells us "The statements made by Dr. Montessori about Itard's work are in most cases erroneous" (p. 87), and though she quotes Seguin in support of her "serial view of mental development," yet this "is not only not Seguin's view, but a view which Seguin would certainly have repudiated as contrary to his conception of the unity of human nature" (p. 153). On the other hand, while she disparages Rousseau's view of freedom, "There is nothing she has said on the subject which has not been as well said by Rousseau" (p. 219). She demands an elaborate system of anthropology as the foundation of education, and has written a large book to show how children are to be measured, but this "does not seem to have influenced her educational practice in the slightest degree" (p. 140).

Dr. Boyd indicates "these main ideas as the foundations of her educational practice"—individuality, freedom, the necessity for special training of the senses as the first step in training (p. 183). None of these is new, and the outcome of the criticism is that, in the form Dr. Montessori gives them, none is true. All are to be found "in more adequate form in Rousseau" (p. 185).

With the general outcome of Dr. Boyd's criticism we are not disposed to quarrel, though the criticism itself does not always appeal to us as adequate, or in some cases pertinent, especially in the part dealing with Freedom. But enough has been said to show the general scope of the book, and that the line taken is one which must claim attention.

J. W.

School Lessons in Plant and Animal Life. By J. Rennie, D.Sc., F.R.S.E. London: W. B. Clive, University Tutorial Press. 4/6.

WITHIN the compass of 480 pages Dr. Rennie has condensed a vast amount of information on common animals and plants in a form readily usable by the busy teacher who may not have the time or the opportunity to consult the advanced text-books on the subjects, or to read the monographs for reliable and original observation to corroborate his own. A good feature of the book is the amount of outdoor work advocated. The best nature-study lesson can be given in the open air.

We are inclined to disagree with the author's conception of nature-study when he says: "The restriction of the course to such lessons only as can be illustrated by specimens is bound to rob it frequently of the best materials, a knowledge of and an interest in which are essential to our aims in nature-study." Surely nature-study should be limited, as the term implies, to those things and processes which the pupil can study for himself. The imparting of nature knowledge by the teacher may be necessary and useful, but it should not rank, as too often it does, as nature-study. It may be better called lecturing in natural history.

A new feature in this the latest of the long list of books on nature-study is the calling attention to the *attractions* of the plant and animals, i.e., to the ways in which they appeal to our æsthetic sense and our appreciation of their utility;

also, the author has made a happy choice in the selection of poetical allusions which are not hackneyed Educators have not always sought to cultivate feeling; there has been too much imparting of information. But it is true that growth of mind and spirit is through the feelings rather than through intellect. Hence the value of seeking pleasure in the observation of nature, of letting the children revel in beauty of colour, form, perfume, and motion.

We do not like the author's statement that "fairy rings have nothing to do with fairies." True, they are produced as a result of the activities of fungal growth, but may not fairies use these natural circles for their play and rest themselves on the convenient stools or shelter beneath the spread umbrellas? It is well to preserve the old belief in fairies—a belief which is being revived, supported and strengthened by learned theses accepted by Oxford professors.

There are a few minor blemishes, e.g., "honey" for "nectar," pp. 7, 8, 16; "water" for "water vapour," pp. 29, 36; "young plant" for "plumule," p. 50; and other errors of a typographical nature. These will, doubtless, not appear in the second edition which is certain to be called for.

The book is a valuable collection of facts, but the teacher should be careful to obey the author's own dictum—"Whilst books are necessary and helpful, the teacher should never allow these to take the place of observation of facts at first hand, and it is to these alone that the appeal must be made in the presence of the pupils." H. V. DAVIS.

Children's Play, and its Place in Education. By Walter Wood, of the Middle Temple. Published by Kegan Paul & Co. (218 pp.) Price 3/6.

THE purpose of this little book, as set forth in the Note—"to present one or two aspects of the matter (Children's Play) which may be new to the public in general and to teachers in particular"—kindled expectations which were hardly realized.

For the non-reading, too hurried worker in education, it may be convenient to have in short form, a summary of the theory and practice of play, and it will be well if it introduces to these readers the authors of books to which "Children's Play" is so much indebted—Karl Groos, Miss Ravenhill, Superintendent Johnson, among others. The chapter on the Playground Movement in America is interesting and full of suggestion: "The child needs in his environment meadows to run in, animals to tame, seeds to plant, hills to scramble up, slopes to roll down, trees to climb, rivers to swim in, and pine air to breathe. All these things, save the meadows and the pine air, have very tolerable substitutes on the city playgrounds in the United States."

One chapter deals with Juvenile Literature and the Value of Stories, but it is inadequate. Lists of stories are offered—it is a pity to see Puss-in-Boots along side of Sleeping Beauty and Cinderella, for the last two are true in spirit while Puss-in-Boots is fundamentally untrue—the unhealthy atmosphere of continuous success following deceit is never corrected, and Evil is left triumphant in the end.

The list of children's books is unclassified, Tom Brown's School Days and Alice in Wonderland being comtemporaries. It is a pity to give our children such mawkish reading as The Lamplighter, The Wide, Wide World, and Eric. Fortunately most of the healthy-minded children of the twentieth century would laugh or be disgusted or uninterested in the priggishness and unreality presented. "The Story of a Short Life" is not reading for a child; it is the story about a child which appeals more strongly to adults. "David Copperfield" and "Hereward the Wake" are given in a list of books—"more especially for girls' reading"—why?

The book strikes one as having been written hastily indoors, in a study, among a few reference books, rather than from scribbled notes made in the playgrounds out of doors, among real playing children. WOUTRINA A. BONE.

The Kindergarten Theory and Practice. Reports of the Committee of Nineteen (xvi + 301 pp.) G. G. Harrap & Co. 3/6 net.

THIS book will be read with interest by all enthusiastic Kindergarteners. It is authorized by the International Kindergarten Union, and may therefore be described as an authoritative re-statement of principles. The book contains three reports; one, the work of Miss Susan Blow, deals with what we may call the Philosophy of the Kindergarten; another, by Miss Patty Smith Hill, concerns the programme, i.e., the selection and organization of its subject matter; and the third, by Miss Elizabeth Harrison, discusses the process of programme making. Miss Blow's contribution is the longest (230 pp.) It is an able exposition of the idealistic doctrines of the master as expressed in the design of the Kindergarten, the gifts and occupations. Indeed, the three reports are all distinguished by lucidity, and, above all, by their serious-mindedness. Surely the gravest criticism of the typical Kindergartener is that she is too conscious of lofty intention. She tends to lose sight of the *joie-de-vivre* which is the essence of childhood, and which is the distinguishing feature of a good home nursery. The report, able as it is, will hardly correct this error.

J. A. G.

BOOKS RECEIVED.

What Children Study and Why: A Discussion of Educational Values in the Elementary Curriculum, by Charles B. Gilbert. (vi+331 pp.) G. G. Harrap & Co. 3/6 net.

Heath's Modern French Grammar, by W. H. Fraser, B.A., and J. Squair, B.A. (xxvii+316 pp.) G. G. Harrap & Co. 3/-.

Hygiene for Girls: Individual and Community, by Florence Harvey Richards, M.D. (xii+257 pp.) D. C. Heath & Co. 2/6 net.

Education and Psychology, by Michael West, I.E.S. (viii+341 pp.) Longmans, Green & Co. 5/- net.

Carlyle's Heroes and Hero Worship. Edited by Herbert S. Murch, Ph.D. (xiv+313 pp.) D. C. Heath & Co. 2/6 net.

The Mother Tongue: Book II—The Practice of English. Edited by John William Adamson and Albert Arthur Cock. (x+363 pp.) Ginn & Co. 2/6.

Manual of Psychology, by G. F. Stout, M.A., LL.D, 3rd edition. . Revised and enlarged. (xvii+769 pp.) University Tutorial Press. 8/6.

Poetry and Life Series. Harrap & Co.

Wordsworth and his Poetry, by W. H. Hudson	...	1/- net.
Schiller and his Poetry, by W. H. Hudson ...	...	1/- net.
Browning and his Poetry, by Ernest Rhys ...	...	10d.

[Further volumes in an admirable series which is becoming so well known as scarcely to require commendation.]

A Primer of English Grammar, by G. R. Kirwan. (48 pp.) Longmans. 9d.

THE HEIR OF ALL THE WORLD.

By F. S. Marvin, M.A.

"Is it not strange that a little Child should be Heir of all the world?" The words are two hundred and fifty years old, written by a contemporary of some of the greatest names in our national records, a quiet country rector, who, while Cromwell and Milton, Monk and Shaftesbury filled the stage, was dreaming things which have only been brought to light within the last twenty years, but anticipate mystic and romantic thoughts of the nineteenth century.

Thomas Traherne was not, however, an isolated figure. Original as his poems are, he was one of a group of seventeenth century poets, of whom George Herbert and Henry Vaughan are his nearest compeers. The trait in his writings which interests us most here is the strain of mystic sympathy with nature, the discovery of a fundamental harmony between man's soul and the changing world around which is most perfectly realized in the unfolding mind of a child. The child's mind, he thought, is attuned to the mind in nature, and, as it grows, takes in what the work and the wisdom of the ages have added to the crude complex which greeted the first human spirit.

It was a mystic poet's intuition of the truth to which recent biology and social science have given fuller meaning and irrefragable proof. For we know now on immediate evidence, and can see with our own eyes, that the child reproduces, in the first stages of his being, earlier and lower forms in that animal realm of which he is the highest though still imperfect product. We know now that the child's nature is by its history akin to less developed forms of conscious life. He plays like all young animals, he crows and chirrups like the birds, he fights like a savage. We know, too, that by his normal growth, even without the deliberate intervention of the adult generation, he will acquire the maturer mind which has been shaped by the age-long process of human evolution. For round about him stands a social order to which he must adapt himself if he is to live. He may indeed modify it, but only to a slight degree, and only in that direction which the general will, arising behind him and carrying him onwards, has already determined before his birth.

Such would be, in briefest summary, the modern scientific interpretation of Traherne's text. The child is heir of all the world because, by his nature at birth, he sums up the biological evolution which preceded him, and, by his education in the world, he acquires the results of a social progress which has gone on since man began. These two truths stand firm whatever the conscious attitude of society towards the child may be in various civilizations and epochs in history. They would be true with us, had we no system of compulsory education, no Children's Country Holiday Fund, no Society for the Prevention of Cruelty to Children. But the fact that we have them is in itself a striking proof of the enhanced value which child-life holds in the present age. Science has shown the substantial meaning of the child's inheritance, and it is one of the first objects of our public policy to assist him in securing it.

This enhanced value of child-life is one of the most hopeful as well as deepest symptoms of our time. Mr. Meynell hardly exaggerated when he declared some years ago that the child was the discovery of the nineteenth century. For there has come to us since the Romantic movement, since the great Revolution, a love and solicitude for children which cannot be paralleled in history. It chimes in happily with the fuller knowledge which science can now afford of the nature both of biological and social evolution. It looks towards the future of which the child is the living and growing symbol; and it takes our minds back gratefully to those, like Traherne, who had a dim inkling of the truth in days when very different standards of humanity and of child-nurture held sway.

But there is another aspect of Traherne's saying, as developed by nineteenth century science, which, perhaps, deserves even closer attention. It contains the germ of a practical doctrine as well as the inkling of a scientific truth, guidance as well as insight. The modern attitude of mind, based on the power of evolution and transfused by tender feeling towards the young and weak, needs some guiding check, and the doctrine of inheritance will be found to suggest it. One school of writers and thinkers on education, grasping only the automatic side of the evolutionary process and abhorring restraint, partly on sentimental and partly on a priori grounds, have held such language as this: Let the child find out everything for himself. Let Nature punish. Let the divine self go free. One has heard it on educational platforms, and read it in a dozen books; and though the danger of finding it in full practice in any actual nursery or schoolroom may not seem great, it is worth while to consider how far the doctrine of human evolution and inheritance, rightly understood, itself supplies the corrective to any one-sided applications.

The *laissez-faire* theory in education has, of course, much in common with the *laissez-faire* which dominated politics for the greater part of last century. "Darwinism in politics" is now a declining force, but it was accountable for much of the social misery and international rivalry of recent years. Darwinism in education, much more humane in appearance and intention, has a similar fallacy at its root, and would, if carried out consistently, have similarly disastrous results. How does the theory run? The child has his own nature to unfold, just as the nation, in the parallel political argument, must fight for its own place in the sun. Nature knows best, and he will come by the unerring process of evolution to the fuller knowledge and the social life which suit his being. The less we elders, the adult generation, intervene, the better. The slower, possibly faulty, but certainly more individual, development which will take place, if we stand aside, is infinitely more valuable than anything we can induce by conscious effort. In this case the parent or educator, as in the political case the Concert of civilized nations, representing the adult community, as a whole, is to leave free play to the natural desires and actions of the individual units.

Obviously, neither in politics nor in education, can such a theory ever have full sway. Circumstances are too much for it, but none the less it is devoutly cherished by many thinkers in both spheres. It is a half-truth which needs to be completed and kept in its place by the other and better half. Traherne's fine saying suggests the limiting and guiding idea. The "heir of all the world" is in tutelage. The larger his inheritance, the longer his minority. Each succeeding adult generation is trustee, and with each accession to the inheritance the duties of the trustee become more arduous and urgent; but to put them aside and leave it all to Nature would be to abdicate from the highest function of human effort, to deny the value of the collective wisdom won by ages of human thought.

The duties of the trustee are difficult enough, but it simplifies the case to recognize at starting that the problem is a practical one, not one of abstract science or pure theory at all. Each fresh mind adds something of value—Rousseau's education of Nature, Professor Armstrong's Heuristic Method, Mr. Holmes's self-realization, Dr. Montessori's sense training. But the greatest of all arts cannot abide by one technique, cannot accept any one partial explanation of the living process with which it has to deal. It is the ideal to be aimed at, not any shibboleth of method, which will give unity to the artist's efforts in education as in all other great practical affairs. But this concern, of administering the child's inheritance and training the heir, is complicated not only by various theories and counsel, but by a divided responsibility. The trusteeship is in joint control, with all the questioning and differences inherent in such an arrangement. The parent, the teacher, the State, all rightly claim a share in managing the estate; but for our present argument they stand substantially in a similar position, all representing the maturity of those powers and acquisitions into which the heir is gradually to enter. They have all acquired their estate, and are enjoying, dissipating, or enlarging it according to their kind. Towards the child they all stand for the level of civilization which society has reached in their day: this is essentially their claim to trusteeship. Whatever their inferiority in the particular case may be, we have to assume that parent, teacher, state department, or organization represent to the child something like the average culture of the age into which he is born. Then the practical question arises: How far is such a person consciously and deliberately to lead and initiate the child into the social and intellectual wealth which he inherits? How far is he to stand aside, and let the child fight and choose and learn for himself?

It is thus a practical question, a question of action in which everyone must take a part, not a theoretical matter into which we may look or not as we please. Our views and scientific knowledge, if we have any, will influence our line of action, but not determine it. What we want to have and to be, and not what we know, will be the main determinant.

Of all the recent schools or tendencies of thought on the question, one stands out in such conspicuous contrast with all the earlier schools that we cannot help regarding it as in some special way characteristic of the age. We associated it with the theory of *laissez-faire* in politics, and Rousseau was its chief apostle. Now he and those of his school in education tend to disparage the value of the child's inheritance. What we have called "social and intellectual wealth" they are inclined to describe as "hampering and artificial convention." They hope that with greater freedom the child may, on the promptings of nature, devise better ways of life and learning than his elders. So one of Dr. Montessori's latest editors tells us that her work will "transform the educational systems of the world, because it embodies a truer return to nature, a faith in the inborn capacity of each child to develop well, given the right environment, removes many of the checks and restrictions laid upon us by the cumulative artificial conditions of modern life, and allows study of the child when unaltered from the natural."

It is clear here that "right environment" may be interpreted to mean just as much or as little control as the interpreter desires; and it is not at all clear what is the "Nature" to which the child is to return. But detailed criticism is not to the point. The passage is significant for our argument as an explicit statement of the belief, common to this school of thinkers, that the primary business of the child's trustee is to remove the restrictions of modern life, and let the natural inborn capacity of the child develop freely and well. "Right environment," no doubt, but unspecified; the important point is to remove the checks and return to nature, and let her lead.

It is the note of a famous school of thought, and springs from many strains deep-set in modern life. It is in striking contrast with the "*idées-mères*" of all great earlier systems of education. Take Plato, Aristotle, any mediaeval educator, Comenius, Milton, Locke, Herbart. All agree in starting with a definite ideal which the educator should have in mind before he begins to train his pupil. He is to be the spirited guardian of the State, with his mind enlightened by an ascending scale of sciences. Or he is to combine the chivalry of the knight with literature and the practical arts. Or he is to be trained to harmonize all knowledge in a moral ideal of social service. All these were definite ideals to be preconceived for the heir by his guardians, according to earlier schools of thought. The new theory which we are discussing throws all this to the wind. There is no explicit ideal type in the mind of the educator. He is to rely on the free development of natural capacity for the production of the best possible types suitable to their environment. It will be seen that the new (Darwinian) ideas of evolution have been added to the older notion of the return to nature to form the theory. It is vague, but vigorous and revolutionary, and very characteristic of the last hundred or hundred and fifty years of Western history. Those who, like the present writer, hold firmly to a belief in continuity with the past, will feel that there must be some means of incorporating the good in the new ideas—the free initiative, the hope of new types of excellence—with the necessary truths of the old regime, with a moderate authority and a liberal but definite ideal.

The conflict of ideals in education is, of course, only a reflection of the confusion of counsel and of interests which has been prevailing in the larger world of thought and action. There are signs that it is yielding to a new and stronger harmony, and few, if any, would be ready to maintain that confusion and the absence of authority are in themselves a blessing. The "Concert of Europe" was unable to agree sufficiently to impose terms of peace upon the Balkans. But hardly anyone would hold that this default was in itself an advantage, and the second devastating war a necessary and profitable thing. All are ready to criticize the Concert or the schoolmaster; but if successful, they are, with equal unanimity, applauded.

The newly-found principles of free development—the doctrine of Rousseau, the language used about the Montessorian and other innovations—are mainly critical; it is a protest and a corrective for repressive discipline and mistaken tradition. As such it is always salutary, and often adds a new constructive idea by the way. But for the larger notions, ideas which give harmony and purpose to our practice as a whole, we need to go further back, and rely more than our revolutionists would admit on the great commonplaces of the past. From this point of view Traherne's golden thread has special value. It is tied firmly to the past, and in modern times has been wound round and fortified by many fresh strands of science and social life. The image which he suggests of the surrounding world, with all the knowledge and beauty which the race has accumulated, as the child's inheritance, will only gain in truth and impressiveness as the world grows older. It is equally and abidingly true that each adult generation is the child's guardian and trustee, and cannot on any abstract theory of free development abdicate its trust.

The applications are large and fairly obvious, but lead into rather pleasant paths of thought. There will be an ideal in the mind of the educator as in the older authoritative systems, but it will be more flexible and comprehensive than in theirs. It will arise from all that is best in the achievement of the past. As the normal action of the conscious human spirit is constantly to embody the past, and live it again in stronger, purer and more comprehensive forms, so at the most critical point in this process, when the adult generation is meeting the new life which is coming up to succeed it, there will be the most careful and deliberate effort to avoid a breach with the past. The tone therefore of the education of the young will tend to be rather more conservative, to lean rather more on the past than the average current of the age in which they live. The child is the heir of the world and of the past. He needs training mainly in three directions in regard to it. He has first to realize and to enjoy his inheritance. It is in this respect that modern theories of education show to most advantage compared with the clouded and restricted ideals which for so long hampered the expansion of the Western mind. The good things of the inheritance are, in the first place, a source of legitimate and inexhaustible personal enjoyment, and the child can go no further on his course until he personally and sincerely appreciates his birthright. This is the necessary preliminary of the second stage, of preserving and enlarging the estate. The two processes are connected in the normal history of growth. We grow by that which we enjoy, and average prudence builds up fresh stores for future use. But in the case of man's activity and development a third and governing condition is necessary. All purely human enjoyment is fed by social products, on language and arts, which, like reason itself, are pervertible, and die if cut off from their root in social life and fellowship. Hence the third canon of the child's training as heir of all the world. It must be a social training in using his inheritance for the common good.

The old text, a little stretched, contains as much general wisdom as the case requires. It is doubtful whether any other short formula could be found to give so much guidance on the most perplexed question of modern life. In resting the training of the child on his inheritance from the past, it points primarily at realizing and enjoying the inheritance. But such enjoyment would be futile and destructive unless it led to further growth and acquisition; and the substance of the inheritance is such that growth and enjoyment itself depend on recognizing, both by sympathy and action, the social origin and purpose of all the wealth.

NORMS OF PERFORMANCE IN THE FUNDAMENTAL PROCESSES OF ARITHMETIC, WITH SUGGESTIONS FOR THEIR IMPROVEMENT.

By P. B. BALLARD, M.A., D.Lit.

Introduction. We have within quite recent years become alive to the importance of establishing norms or standards by which the abilities of children of different ages may be measured. The first to experiment in this direction was Binet; and it is interesting to note that he attempted to measure a function which is more obscure in its nature and more complex in its working, and consequently more difficult to measure, than ability in any of the specific branches of school instruction. Indeed, it is doubtful whether his so-called tests of intelligence do actually measure any set of clearly-defined mental processes. Hence the qualified success of his efforts.

It is manifestly better to begin with an investigation of the more mechanical processes of the mind; for whatever view may be held as to the possibility of exactly measuring mental processes, it will, I think, be conceded that those that have been mechanized into habit are easier to gauge than those of a highly intellectual nature, and more likely to meet the rigid requirements of mathematical science.

Arithmetic affords a suitable field for an investigation of this kind. An attempt is being made in America by Mr. Courtis to secure norms of performance in this subject; but, although I have not seen his tests, I understand that he does not succeed in clearly differentiating between the mechanical and intelligent aspects of the subject. This seems to me to be a serious defect. For in dealing with arithmetic as taught in the schools, we are really dealing with two distinct things. There is first the mechanical process of adding, subtracting, multiplying and dividing—the rule of thumb arithmetic, involving a knowledge of the multiplication and addition tables, of carrying, "borrowing," and the various devices for arranging the intermediary steps and final results. Then, as more or less distinct from this, there is the intellectual grasp of the principles of number, and the capacity to apply them to the actual or imaginary problems of life. Whether it is possible to devise for the latter faculty tests that can be repeatedly applied, is very doubtful, for their value largely depends upon their novelty; but no such objection can be urged against tests of skill in the mechanical operations.

The tests. I have accordingly got out four tests—one for each of the fundamental rules—and applied them to London children in thirty-three boys' schools, thirty-four girls' schools, and two mixed schools.

Test 1.—Addition.

296 845 379 656	523 288 493 965	768 494 852 937	362 647 554 875
354 837 467 598	587 738 894 238	425 743 897 568	767 866 594 842
868 987 365 539	327 956 485 767	367 472 834 588	828 674 359 796
675 436 854 379	389 475 693 987	645 472 389 693	538 943 479 856

Test 2.—Subtraction.

5601 3729	8264 4867	9612 2874
9043 3858	8101 3773	9120 5476
8004 1045	7253 2856	5324 4629
7451 1862	6102 2537	5103 2865
9182 8386	9730 4861	8035 2439
8215 538	9027 7948	8031 6976
7541 3875	9013 6069	2275 1396
5528 2629	6241 3672	5314 1966

Test 3.—Multiplication.

694 4	286 7	258 5	563 6
648 2	574 9	827 3	749 6
573 4	953 7	963 5	692 8

$$\begin{array}{rcrcrcr} 825 & \qquad & 582 & \qquad & 936 & \qquad & 735 \\ 2 & & 9 & & 3 & & 8 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{rcrcrcr} 847 & \qquad & 928 & \qquad & 874 & \qquad & 475 \\ 7 & & 4 & & 6 & & 5 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{rcrcrcr} 693 & \qquad & 937 & \qquad & 487 & \qquad & 845 \\ 9 & & 2 & & 8 & & 3 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{rcrcrcr} 746 & \qquad & 584 & \qquad & 296 & \qquad & 827 \\ 7 & & 4 & & 6 & & 5 \\ \hline \end{array}$$

Test 4.—Division.

$$\begin{array}{llll} 4\overline{)2293} & 7\overline{)6675} & 5\overline{)4817} & 6\overline{)4495} \end{array}$$

$$\begin{array}{llll} 2\overline{)1651} & 9\overline{)5341} & 3\overline{)2810} & 8\overline{)5884} \end{array}$$

$$\begin{array}{llll} 4\overline{)2779} & 7\overline{)2002} & 5\overline{)1294} & 6\overline{)3380} \end{array}$$

$$\begin{array}{llll} 2\overline{)1297} & 9\overline{)5174} & 3\overline{)2482} & 8\overline{)5539} \end{array}$$

$$\begin{array}{llll} 7\overline{)5931} & 4\overline{)3715} & 6\overline{)5249} & 5\overline{)2377} \end{array}$$

$$\begin{array}{llll} 9\overline{)6241} & 2\overline{)1875} & 8\overline{)3902} & 3\overline{)2537} \end{array}$$

Mode of procedure. The tests, when not graphed by the teacher, were copied by the children from the blackboard or from dictation on a date previous to that on which they were actually worked.

Five minutes was the time given for working each paper, and an interval was allowed to elapse between the separate tests.

In marking the answers each column worked correctly in addition and subtraction scored one, and each simple process in multiplication and division scored one. The maxima, therefore, were: for each example in addition, 3; in subtraction, 4; in multiplication, 3; and in division, 3. This method was found to be easy to apply and productive of results sufficiently accurate for the purpose in view. It is, however, not free from faults. The first column worked, for instance, is in each case easier than the subsequent ones, as it involves no "carried" number. A more serious objection arises from the difficulty of detecting whether a mistake in a column, or a simple operation, is due to the "carried" number or to the operation pure and simple. In other words, there is sometimes a danger of counting a mistake twice over; and it is not improbable that a few of the children tested were given less credit for their work than they deserved. The only other disadvantage of this system of marking lies in the disparity of value in the marks awarded for the different "rules." A mark, for instance, is more easily scored in multiplication than in addition. A comparison can, however, be easily instituted, if need be, on the basis of the averages actually obtained.

The number of errors were also recorded in the same way. For example:—

$$\begin{array}{r} 6\ 9\ 4 \\ 4 \\ \hline \mathit{2\ 7\ 3}\ 6 \\ \hline \end{array}$$

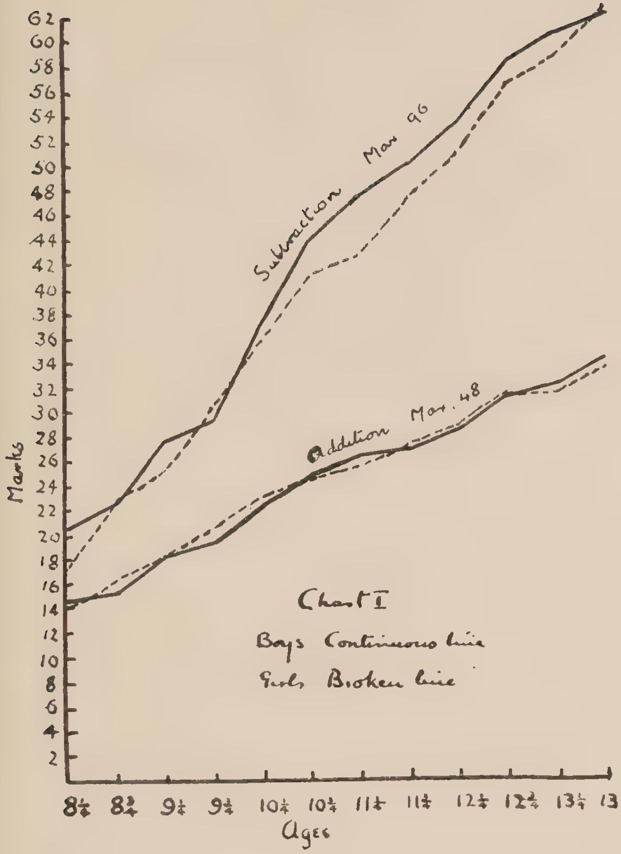
would be counted as two marks and one error, the 27, representing one process of multiplying and carrying, scoring one mark only.

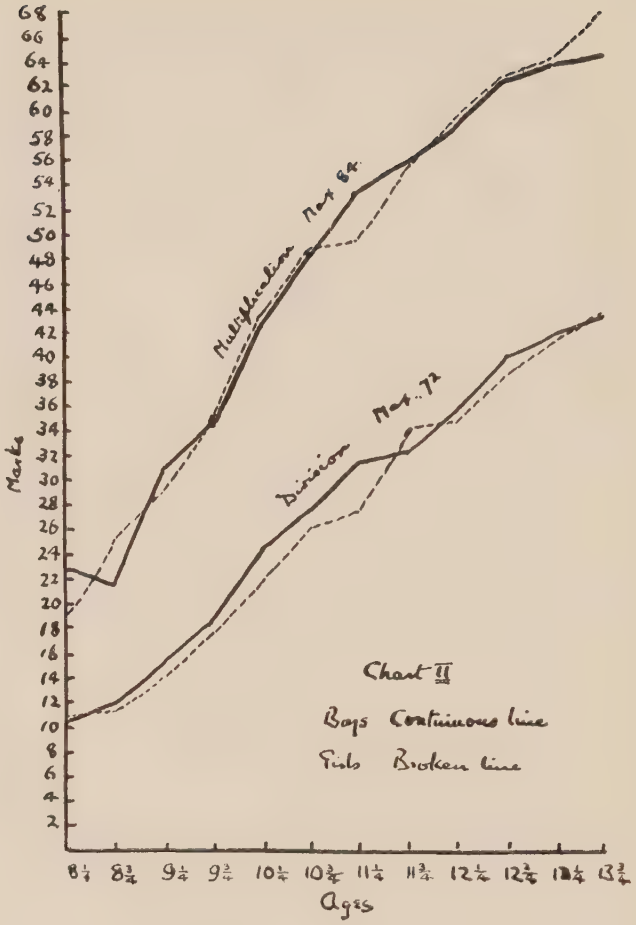
A record was kept of the number of children who finished the papers before the expiration of the five minutes.

Altogether 18,678 children were tested, 9,176 being boys and 9,502 girls. The papers were grouped according to the age of the pupils and not according to the class or standard in which they were taught; all children between 8 and $8\frac{1}{2}$ years old being regarded as $8\frac{1}{4}$, those between $8\frac{1}{2}$ and 9 as $8\frac{3}{4}$; between 9 and $9\frac{1}{2}$ as $9\frac{1}{4}$, &c.

Results. The scorings were tabulated for each school separately, and the grand total obtained by massing these results. The final averages were arrived at by taking the average of the several school averages; but since the number tested in each school did not widely vary, these final averages may be regarded as fairly representing the actual facts.

The results so obtained are set forth in Charts I and II. The continuous line representing the boys and the broken line the girls. It will be observed that on the whole the girls are scarcely, if at all, inferior to the boys. The same conclusion is arrived at by a comparison between the records for boys and girls in the two mixed schools tested. The younger girls add better than the boys, and the older girls multiply better. The fact, however, that on the whole more boys than girls finished before time (see charts III, IV, V and VI) disturbs the balance in favour of the boys, and lends colour to the popular view that boys are superior to girls in all aspects of mathematical ability.


Subtraction Max 96
Addition Max. 48
Marks
62
60
58
56
54
52
50
48
46
44
42
40
38
36
34
32
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
8¼
8¾
9¼
9¾
10¼
10¾
11¼
11¾
12¼
12¾
13¼
13¾
Ages
Chart I
Boys Continuous line
Girls Broken line


Multiplication Max 84
Division Max. 72
Marks
68
66
64
62
60
58
56
54
52
50
48
46
44
42
40
38
36
34
32
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
8¼
8¾
9¼
9¾
10¼
10¾
11¼
11¾
12¼
12¾
13¼
13¾
Ages
Chart II
Boys Continuous line
Girls Broken line

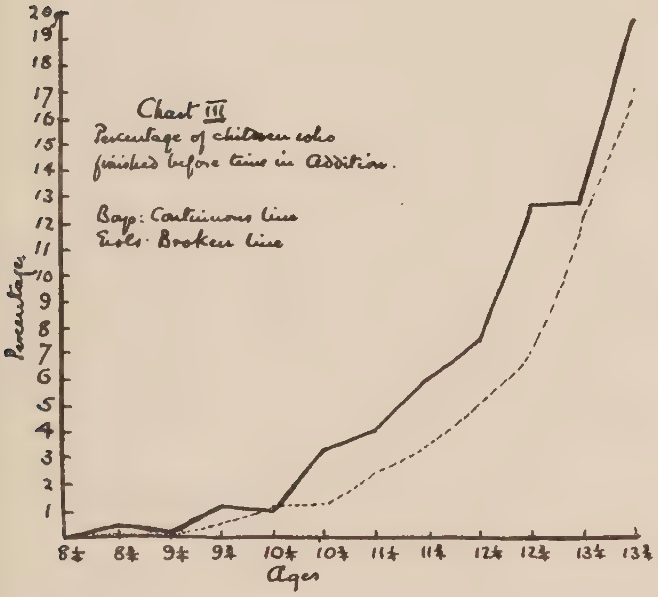


Chart III
Percentage of children who finished before time in Addition.
Boys: Continuous line
Girls: Broken line
Percentage
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
8¼
8¾
9¼
9¾
10¼
10¾
11¼
11¾
12¼
12¾
13¼
13¾
Ages

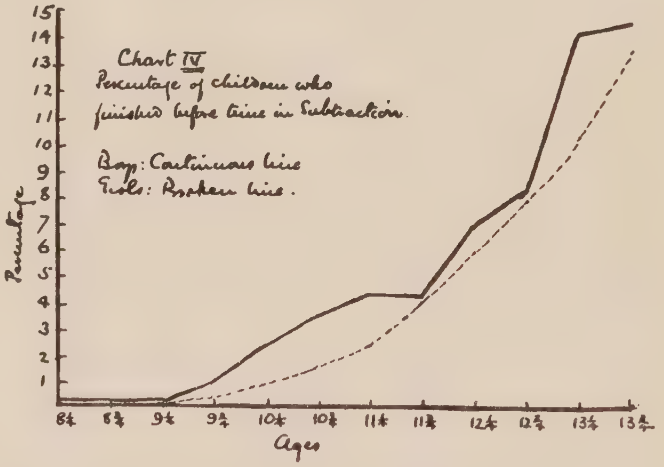


Chart IV
Percentage of children who finished before time in Subtraction.
Boys: Continuous line
Girls: Broken line.
Percentage
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
8¼
8¾
9¼
9¾
10¼
10¾
11¼
11¾
12¼
12¾
13¼
13¾
Ages

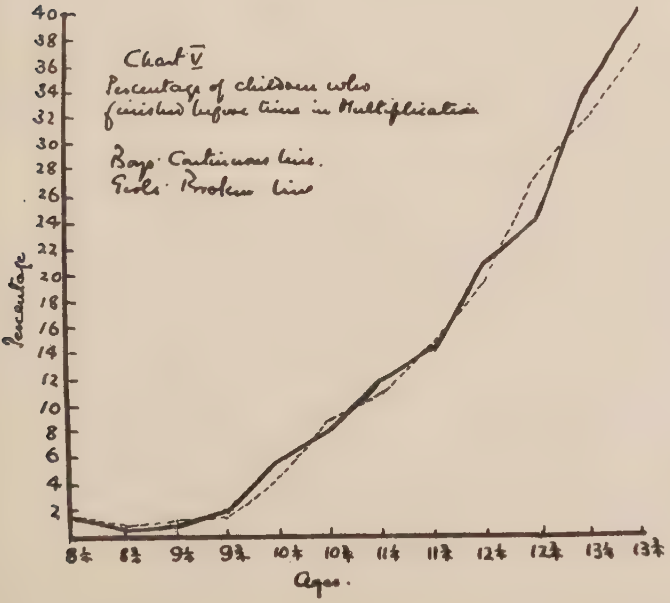


Chart V
Percentage of children who finished before time in Multiplication
Boys: Continuous line.
Girls: Broken line
Percentage
40
38
36
34
32
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
8¼
8¾
9¼
9¾
10¼
10¾
11¼
11¾
12¼
12¾
13¼
13¾
Ages.

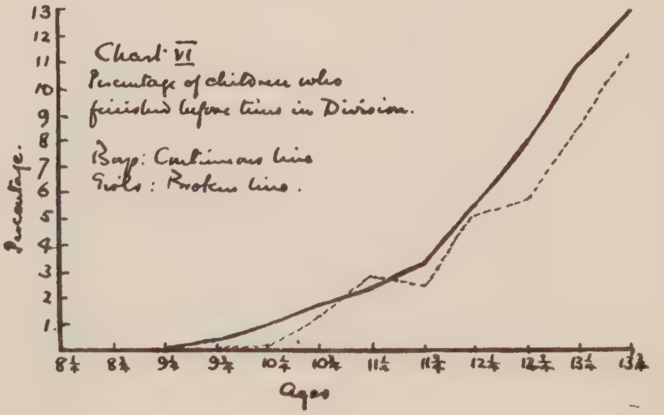


Chart VI
Percentage of children who finished before time in Division.
Boys: Continuous line
Girls: Broken line.
Percentage.
13
12
11
10
9
8
7
6
5
4
3
2
1
8¼
8¾
9¼
9¾
10¼
10¾
11¼
11¾
12¼
12¾
13¼
13¾
Ages

Number of errors. It is a curious fact that the average number of errors made is virtually the same for each age-group, For instance, the average number of errors in the addition paper for the twelve age-groups of girls, beginning with the youngest, works out as follows: 2·44, 2·70, 2·37, 2·60, 2·46, 2·15, 2·15, 2·60, 2·32, 2·62, 2·12, 2·39. It will be seen that at each age the girls made between two and three mistakes. This does not, of course, mean that the accuracy remains constant throughout, for the girls of 8¼ made 2·44 errors in scoring 14·31 marks; while the girls of 13¾ made 2·39 errors in scoring 33·59. In the latter case, therefore, the accuracy was more than twice as great as in the former. It follows from the constancy of the number of errors that the accuracy that comes with age varies directly with the speed of working.

The average number of errors for the four processes is as follows:—

Boys	...	2·8	5·4	4·3	4
Girls	...	2·4	6·2	4·6	4·3

The mean variation in the errors for the various age-groups is, in the case of each of the four rules, considerably less than 1. It will be noticed that except in addition the boys are slightly more accurate than the girls.

"Smoothing" all the curves in Charts I-VI we get a table of norms of performances for London children.

Norms of Performance.

Age Group.	Marks.				Percentage of Children who finished before time.				Errors.			
	+	−	×	÷	+	−	×	÷	+	−	×	÷
8 — 8½	14	19	20	10	—	—	—	—	2½	6	4½	4
8½— 9	16	22½	24	12	—	—	—	—				
9 — 9½	18	26½	29	14½	—	—	1	—				
9½—10	20	31	36	18	—	1	2	—				
10 —10½	22½	36½	42	22½	1	2	5	—				
10½—11	24½	41	48	26½	2	3	8	1				
11 —11½	26	45	32	30	3	4	11	2				
11½—12	27½	49	56	33	4	5	14	3				
12 —12½	29	53	60	36	5	6	20	5				
12½—13	30½	56	63	39	9	8	26	7				
13 —13½	32	59	65	41½	12	11	33	9				
13½—14	33½	62	67	43	18	14	40	12				

Reliability of the results. The claim made on behalf of these results demands a few words of defence. First, as to their representative nature. Although the sixty-nine departments tested form a small proportion of the total number of schools in London, care was taken to make the selection representative by including slum schools and schools in the well-to-do neighbourhoods; schools where emphasis is placed on modern methods, and schools where there is a leaning towards the older methods; schools where arithmetic is believed to be strong, and schools where it is believed to be weak. None of the schools were "Central," but two were "Higher Grade." Classifying the 69 departments on the basis of the social status of the children, I should assess 17 as good, 31 fair, and 21 poor.

As there were 74,712 papers to be dealt with, it is obvious that they could not be marked by one and the same person without his being subjected to intolerable drudgery. Fortunately that was not necessary, as the mode of marking was rigid and mechanical, and left no room for individual judgment. The papers were accordingly marked at the school by the class teachers under the supervision of the head teacher. In some cases the work was carried out entirely by the head teachers; in others I took away the papers of certain age-groups and had them marked at home; in others, again, the examination was conducted by my colleague, Mr. Wedmore.

Many years intimate knowledge of the schools tested has served to establish in me a complete trust in the *bona fides* of the head teachers concerned. Indeed, they seemed quite as eager as I myself to discover the actual state of affairs, and entered with zeal into the spirit of the enquiry. The general plausibility of the results was confirmed by other data in my possession which enabled me to compare school with school.

Since the general summary was compiled, I have tested several other schools, and the results have in each case increased my confidence in the original findings. The figures may therefore be accepted as representing, with a reasonably small margin of error, the average achievement of normal London children. It is probable, or indeed certain, that in some of the poorest quarters of London the results would, on the whole, be much worse; but if all the schools in London were tested I do not think the outcome would differ materially from the above table.

Value of the Table of Norms. A few of the uses of this Table may be indicated:—

(1) It is possible for any class teacher, by means of these tests and norms, to discover whether his class is above or below the average in computative skill.
(2) A head teacher may do the same with his school.
(3) The tests form a convenient auxiliary to the head teacher's means of classifying children newly admitted.
(4) They can be made the basis of a comparison between the proficiency of London children and that of children in the provinces or in other lands.
(5) It will in the future be possible to challenge wild and unsupported assertions respecting the increasing degeneracy of the elementary scholar in respect of accuracy in arithmetic. In future years it will be quite easy, by setting these tests at the same or similar schools, to measure the amount of progress or regress since 1914.

The possibility of "cramming" for the tests. There is always a danger that tests may be rendered futile through being prepared for. Some of Binet's tests are notoriously exposed to this danger. The essence of a problem consists in the difficulty presented being novel, and once the novelty is removed the problem becomes inoperative: it ceases, in fact, to be a problem at all. Arithmetic questions intended to test the intelligent application of principles are largely of this nature: a little preparation nullifies them.

With these tests, however, such preparation is impossible. To prepare for the addition and subtraction tests, for example, the whole of the addition table must be known; and to prepare for the multiplication and division tests the whole of the multiplication table. For the tests have been so constructed as to include all the possible combination of figures (except the very simplest) required for testing proficiency in the tables. To "cram" for the tests therefore would mean to master the whole of the basal work in mechanical arithmetic—to fix all those habits upon which facility in computation depends. And this is a long and slow process, and the outcome lacks the superficiality and impermanency which we associate with "cram."

It does not mean, however, that continued practice has but little effect upon these exercises. Indeed, it has been shown by Mr. Winch that improvability in mechanical arithmetic is both marked and steady. I have myself ascertained the degree of progress that can be made by a week's practice in these exercises. A certain boys' school was tested in the usual way, and the five arithmetic lessons of the following week, each lesson lasting forty minutes, were devoted exclusively to the practice of similar examples. The average result for the whole school was as follows:—

	Marks.				Errors.				Number who finished before time.			
	+	−	×	÷	+	−	×	÷	+	−	×	÷
(A)	25·36	52·47	55·38	31·33	1·77	4·08	3·12	2·71	21	45	69	22
(B)	30·75	58·96	61·01	37·46	2·58	3·82	2·98	2·95	38	70	106	51

A: Before practice.
B: After 5 lessons practice.

There is, of course, no reason to believe that this rate of progress would be kept up. If it were, the school would reach perfection within seven weeks. There is little doubt, however, that a little practice carried out weekly would soon have a very marked effect upon this important aspect of the mathematical work of the school.

Comments on the addition tests. The curve of progress from the ages of 11 to 13½ is virtually a straight line, and if the same rate were maintained for later ages the maximum marks would be attained before the pupil was 19 years of age. The improvement with age is only partly due to a more facile application of the same method: it is mainly due to a change of method, to a gradual supersession of habits of a lower order by habits of a higher order. The lowest habit of all is that of adding by units; the highest, that of adding *en bloc.* For example, in adding the series $8+5+9+2+7+1$ the pupil working by the former method would start $8+1+1+1+1+1$, &c., while the pupil working by the latter would say $8+5=13$ as a mere matter of rote memory. Between these two extremes there are various intermediary stages. Some, for instance, decompose the addends in order to form tens. Thus $8+5=8+2+3=10+3=13$. Adding the next item, $13+9=13+7+2=20+2=22$, &c. Some other devices used to avoid counting by units are also based upon the decomposition of the addends into groups that can be added without further reduction. Then there is the method of arriving at the result by noting how far it falls short of a readily-ascertained sum. For instance, $13+9=13+10-1$; and $8+7$ equal $8+8-1$. Lastly, there is the method advocated in some schools of searching along the column for numbers which form tens. Thus in the series given above the 8 and the 2 would be coupled, and also the 9 and the 1. This is a useful device when the paired numbers come together; but to link them when widely separated is to increase unnecessarily the mental strain, and to run the risk of omitting or duplicating some of the addends.

There can be little doubt therefore that the most efficient method is that of adding the items seriatim and memoriter—as they come and by the addition table. Advantage should, of course, be taken of any obvious ten-group that would appear, but there should be no hunting for it. It has been maintained by some that to add $4+9$ as $4+10-1$ is more "intelligent" than to say straight off $4+9=13$. But why should it be so? There is an assumption that $4+10$ is known, while $4+9$ is not. Logically the proposition $4+9=13$ rests on the number system, 1, 2, 3, 4, &c., and counting by units is, in a sense, the one and only "intelligent" method—the one and only method that lays bare the ultimate ground of the proposition. But it is assumed that the rationale of adding is clearly understood by the pupils; and the question under discussion is not the most explicitly logical but the most expeditious mode of adding. As a step towards memorizing $4+9=13$, the operation $4+10-1$ may be permitted; but the process is not complete from the point of view of practical efficiency till it is short-circuited into $4+9=13$. The number of items to be thus memorized is not great. For if $4+9=13$ be learnt, the sums of all such combinations as 14 and 9, 29 and 4, &c., are easily inferred therefrom.

The time taken to work the addition paper gives a clue to the method used. I have applied the test to a few children without imposing a time limit. The children handed in their papers as soon as they were finished, and the time taken was recorded thereon. Later on each child was privately asked to work through one of the sums orally, in order that the method adopted might be ascertained. The results confirmed the view that both speed and accuracy depend upon the grade of habit upon which the process of adding is based.

The danger of forming bad habits of computation is far greater in addition than in multiplication. In working the latter there is little temptation to count. The veriest tyro cannot fail to perceive the enormous labour-saving advantage of remembering that $6\times8=48$ over the counting of six eights; but the advantage of memorizing $6+8=14$ is not so obvious when the result can readily be arrived at by a mechanical drumming with the fingers. It is indeed a notorious fact that a certain percentage of educated adults count on the fingers—when nobody is watching them.

(To be continued.)

SHOULD YOUNG CHILDREN BE TAUGHT ARITHMETICAL PROPORTION?

By W. H. WINCH.

PART III.

I. The Problem of the Experiment: Why we need further Evidence.

In two previous issues of this Journal I have discussed whether Arithmetical Proportion should be commenced in schools at an earlier age and with lower classes than is now customary. Experimental evidence has been adduced in connexion with the seven-year-old children of an infants' school —Standard I—and with all the boys of a municipal elementary school in the East-end of London, attended exclusively by Jewish children. The evidence from the first seemed to show that "Standard I" children might very successfully undertake the work. The evidence from the second seemed to indicate that it was scarcely profitable to commence with a lower class than "Standard III," though it was apparent that a section of the "Standard II" class, could they be taught separately, might undertake it with advantage. But the infants' school was of high pedagogical proficiency, and the boys' school of lower proficiency, though rapidly improving. Moreover the boys were the children of Jewish aliens, and though it might be conceded that boys, both in infants' schools and elsewhere, might profitably commence "proportion" sooner than at present, it would be urged that I have presented no evidence from girls' schools. Also it is argued that evidence should be presented from schools or classes, which, either in virtue of "race" or "social class" or by reason of pedagogical attainment, would be likely more adequately to represent the case as it exists in ordinary schools. There is force in these contentions; since, though the infants' school is attended by "poor" children, it is of higher pedagogical efficiency; and the other school in which the work was done was a boys' school, also in a poor neighbourhood; indeed, in a poorer one than the infants' school. But the children, except as to birth-place, were not English, and numbers of them were not even born in England. So I shall present evidence from girls' schools to which, I think, none of the above objections apply.

II. The Third Series of Experiments.

i. General Condition of the Third Series.

A third series of experiments was carried out in the "Standard II" class of a girls' school situated in a "fairly good" district in a south-western suburb of London. The children were all English, and in social class the girls ranked higher than the children who attended the infants' school whose work was previously cited, though they were certainly not of the highest type of London elementary school children; and there were circumstances that doubtless influenced the girls who did the work which teachers would accept as likely to produce results which were quite ordinary or even less than ordinary. First of all, the school contained no "Standard I" class, so that a number of the children in "Standard II"—the class which did the work—were not really suitable in attainments for that class; secondly, their number-work was weak generally; and thirdly, this particular class had been taught by no fewer than five different teachers in nine months. Of course, throughout the whole time the experiment was in progress, no work in proportion was done in any other lesson except the stipulated lessons of the experiment, and no "instruction" given of any kind. All the exercises were taken by the head mistress, who had had years of experience in the procedure of pedagogical investigation.

ii. THE TESTS, THE CHRONOLOGY OF THE EXPERIMENT, AND THE METHOD OF MARKING THE ANSWERS.

Owing to a lack of explicitness in my directions, the earlier exercises of the series were not precisely identical with those set in the infants' and boys' schools whose work has been described in Part I and Part II of this research. The sets of problems, sum for sum, were built up on the basis of those I have cited in Part I, but the numbers were more difficult to deal with. Consequently the results of the earlier tests are not quite comparable with those previously given. At the seventh exercise, however, the identical exercises previously cited were adopted, though the difference in the numbering, eighteen tests being given in the previous cases, and twenty-one in this school, renders a test for test comparison unavailable. The system of marking was precisely the same as that used previously: one mark was given for each correct answer, ten being the maximum mark for each set of problems. The series began on Wednesday, November 6, 1912; the second exercise was given on Friday, November 8, and thenceforward on Tuesdays and Fridays of each succeeding week (with necessary intermissions for Christmas holidays) until Tuesday, January 28, 1913. All the exercises were given in the morning at 10 o'clock, preceded by a few minutes physical exercises, which were preceded, as usual in English schools, by a Scripture lesson. The earlier sets of problems, to which the answers "more" or "less" were required, took ten minutes. The numerical answers to or from unity required approximately twenty minutes; about twenty-five minutes were taken in answering the problems in two movements, and in the final stage some fifteen minutes were occupied in answering each set. I purposely cite the time taken by the work, as we can scarcely say of the schoolday that *die Zeit ist unendlich lang*, and time-consumption may very well be prohibitory even of otherwise excellent methods of teaching or learning.

iii. RESULTS FROM THE STANDARD II CLASSES OF THE FAIRLY WELL-SITUATED GIRLS' SCHOOL.

I give the results separately for the two sections into which this class naturally fell. The Teachers were of opinion that it was unfair to class them together, since the girls of the lower section (called

Standard IIb) had never been previously taught in a "standard" class at all. The first table, therefore, will show the results for the normal Standard II children, here called Standard IIa: the second table will give those of the Standard IIb section of the class.

Table I, showing the average number of correct answers of 39 Standard IIa girls, for each set of Problems.

Average age on December 31, 1912=8 years, 9 months.

		Maximum=10 Average Mark obtained.		Mean Variation.	
First Step.	Complete Proportion Problems.				
Exercise 1.	Answered by "More" or "Less."	8·4		1·0	
Second Step.	Half Proportion Problems.				
Exercise 2.	Answered by "More" or "Less."	9·0		0·7	
Third Step.	Complete Proportion Problems.				
Exercise 3.	Answered Numerically.	3·7		1·5	
Fourth Step.	Half Proportion Problems.				
Exercise 4.	Answered Numerically.	3·7		2·4	
,, 5.	,,	4·1		1·8	
,, 6.	,,	4·9		2·0	
,, 7.	,,	7·9		1·4	
,, 8.	,,	8·1		1·2	
,, 9.	,,	8·2		1·2	
Fifth Step.	Complete Problem Proportions. Answered Numerically in Two Halves: (1) To Unity; (2) From Unity.	(1)	(2)	(1)	(2)
Exercise 10.	,,	6·8	5·0	1·7	1·6
,, 11.	,,	5·4	4·6	1·3	1·7
,, 12.	,,	6·2	5·8	1·8	1·7
,, 13.	,,	6·9	6·9	1·8	2·0
,, 14.	,,	6·6	6·8	1·7	1·3
,, 15.	,,	7·7	7·2	1·8	1·7
,, 16.	,,	7·8	6·3	1·9	2·1
,, 17.	,,	6·8	6·6	1·9	2·0
Sixth Step.	Complete Proportion Problems.				
Exercise 18.	Answered Numerically.	5·9		2·0	
,, 19.	,,	6·7		1·7	
,, 20.	,,	7·2		1·4	
,, 21.	,,	7·6		1·6	

As I have previously pointed out, the earlier exercises of this series were framed with more difficult numbers than those previously used. This scarcely affects the results from Exercises 1 and 2, where "More" or "Less" were the required answers; but it does affect Exercises 3, 4, 5, and 6. The remaining exercises are numerically comparable with those previously given, though not test by test, since, as I have said, we have 21 exercises in this case in place of 18 in other schools. It is not always a disadvantage to have some modification in the nature and order of the exercises in an experiment carried out in a number of different schools, though the modifications were, I admit, in this case at first unintentional. For the conclusion seems quite clear, though the circumstances were, on the whole, unfavourable, that these Standard II girls *can* do proportion sums. It is true that the improvement seems dubious and fluctuating in the Final Step, and to be quite certain that improvement has occurred we need to compare the results of Exercises 10 to 13 with those of Exercises 14 to 17. The improvement in the final stage itself is rapid and certain, and, bearing in mind the fluctuations in Step 5, for the first time one is a little inclined to doubt whether the method of analysis adopted in the Fourth Step is quite so efficacious as it has hitherto appeared. On that matter I propose to say more in another section. For the present, let me be content with emphasizing the conclusion that these Standard II girls in a school in a fairly-good neighbourhood could profitably be taught proportion sums with small numbers, even though the conditions, pedagogically, are against them.

But what shall we say of the lower section of the class, namely, Standard IIb. First let me give the results. It will be sufficient to present the table in an abbreviated form, referring the reader to the preceding table for a description of the "steps" or "stages."

Table II, showing the average number of correct answers of 13 Standard IIb girls, for each set of Problems.

Average age on December 31=8 years, 0 months.

	Average Mark per child.		Mean Variation.	
Exercise 1		7·6		1·3
,, 2		7·6		1·6
,, 3		2·2		1·6
,, 4		1·7		1·4
,, 5		2·8		1·9
,, 6		3·3		1·9
,, 7		4·6		2·8
,, 8		5·7		2·3
,, 9		7·0		2·2
	(1)	(2)	(3)	(2)
,, 10	5·1	4·4	1·3	1·6
,, 11	4·6	3·9	1·3	1·2
,, 12	5·5	3·9	1·4	1·5
,, 13	6·5	6·1	2·0	1·7
,, 14	5·4	5·0	0·9	1·4
,, 15	6·3	5·0	1·3	1·4
,, 16	5·3	4·8	1·5	1·8
,, 17	6·7	5·5	1·8	2·1
,, 18		5·1		1·4
,, 19		5·4		1·6
,, 20		6·0		1·6
,, 21		6·0		1·5

As in all previous cases with young children, these girls find it easy to answer "More" or "Less"; but when, as in the third exercise, they are required to answer numerically to questions of complete proportion, they fail markedly. In Stage 4 they make continuous improvement, and the results rise considerably after the easier numbers begin in Exercise 7. Progress, too, is shown, though with some oscillation, throughout Step 5 and, with the usual temporary set-back, through the Final Stage also. But I do not draw the conclusion *that as a class arithmetical proportion can profitably be taught to the girls of this section.* I have, of course, tabulated the individual results for every test for every child, though I could not present them here without filling this issue of the Journal with tables. But a reference to the individual results for the girls of this section will be useful. Such a reference shows that, even in the twenty-first exercise, only three of these girls can get eight problems right, and four only can get seven problems right. These girls may be considered to have achieved success, but the others have not profited adequately by the exercises. We may say, as we have before in the case of the boys' school, that the whole of Standard II cannot profitably be taught proportion, though in this school there is a very large number who can. But I will shortly adduce evidence from another school. For the present I wish to take up another aspect of the research, promised in Part I, and of interest in connexion with the oscillating improvement of Standard IIa girls in the Fifth Step. Is the analysis we caused the children to make in this stage a useful one? Do children really work by a Method of Unity?

iv. INTROSPECTIVE EVIDENCE ON THE METHODS OF SOLVING PROPORTION SUMS.

A number of these girls, after the whole series had been completed, were called up, one by one, to the Head Mistress, who had the fullest intellectual confidence of her pupils, and questioned individually in a separate room. They were asked how they worked the sums, which, it will be remembered, they were required to do mentally, writing down the answers only. They were questioned on Problems 3, 6, 7, 8, 9 and 10 of the set of problems which, in this school, was given as set 20. These problems follow:

The Problems of Set 20 on which the girls were questioned about their methods.

3. If a man sells 8 pints of milk in 4 days, how many will he sell in 3 days?
6. If I can buy 11 oranges for 11 pence, how many can I buy for 15 pence?
7. If it takes 8 spoonsful of tea to make 4 pots of tea, how many spoonsful will it take to make 2 pots of tea?
8. If 2 vases will hold 6 flowers, how many flowers can be held in four vases?

9. If it takes 6 women 2 days to make some clothes, how long will it take 3 women?
10. A woman uses 6 apples to make 2 tarts. How many will she use to make 5 tarts?

The problems were read carefully and distinctly twice, as in the original exercises. Then the Mistress said: "Tell me how you worked that sum?" The following are the children's answers:—

MAGGIE P. said:

3. *He sold one less because there was one day less.*
6. *One orange cost a penny: they would get 15 for 15 pennies.*
7. *I divided by 2.*
8. *I said there were 3 in each, and three fours are 12.*
9. *Twice six are twelve.* (After a long pause) *I can't do that one.*
10. *She uses three for each, then three fives are 15.*

In Problem 3, Maggie appeals to a principle of children's reasoning which is more primitive than the Rule of Three. If formulated it would run: *So much less of one, therefore the same amount less of the other.* I commend this to Teachers as an explanation of many apparently weird errors in "proportion" made by school children.

In numbers 6, 8, and 10, Maggie definitely uses the Method of Unity. Numbers 6 and 10 could not very well be worked mentally by young children in any other way, but problem 8 could. Number 7, which could be worked by a method of unity or a method of equality of ratios, is definitely solved by Maggie in the second way. She cannot grasp number 8 at all, and she knows it.

CISSY F. said:

3. *Two less than 8 is 6.*
6. *We buy 15 because they are a penny each.*
7. *Four; there would be two in each pot.*
8. *There would be two in each.*
9. *It would take 6 women 2 days; it would take 3 women 2 days less.*
10. *Because there's 3 in each tart, and three fives are 15.*

Cissy has worked Problem 3 thus:—Two pints in 1 day: 3 days is 1 day less than 4: 2 less than 8 is 6, clearly using a method of unity. She uses this method also in Problems 6, 7, 8 (unsuccessfully) and 10. I am unable to suggest a psychological basis for the inaccurate reasoning involved in her answer to problem 9.

ELSIE S. said:

3. *It would be 2 pints in 1 day and 6 pints in 3 days.*
6. *That would be a penny each, and 15 oranges would be 15 pence.*
7. *Two spoonsful for 1 pot, and 4 for 2 pots.*
8. *If two vases hold 6 flowers in, 3 for 1 pot, 12 for 4.*
9. *Six days: if 6 women done it in 3 days, and 3 women done it, that would be twice as much.*
10. *If a woman uses 6 apples to make 2 tarts, that would be 3 in each tart, and 15 in 5 tarts.*

Elsie uses the method of unity in every case except in problem 9, which she works by inverse ratios.

Ivy P. said:

3. *I said 6.* "Yes; and how did you get the 6?" *I don't know.* "Try now." *I can't do it.*
6. *If you get 1 a penny it costs a penny, and you get 15 oranges for 15 pennies.*
7. Gave the right answer, but could not say how she arrived at it.
8. *Twelve flowers, 3 in each.*
9. Gave the right answer, but could not say how she arrived at it.
10. *Three apples in each tart, 15 in 5 tarts.*

Ivy P. is in a stage precedent to knowing how with several of her problems. Let us remember that we adults also often *can* without knowing *how*. Wherever she is able to analyse her method she has used the method of unity.

Ivy T. said:

3. *Six. I took 2 away from it* (that is the 8 pints) *because he sold 2 less every day.*
6. *Because they were a penny each, 15 for 15 pence.*
7. *I multiplied 2 by 2, because we put 2 in each.*
8. *Multiplied by 3, because there are 3 in each vase.*
9. *Four days. I doubled the 2, because 3 women do it in a day, and the other 3 women do it in a day.*
10. *It took 3 apples to make each tart, and 5 times that.*

Ivy T. is an unambiguous supporter of the method of unity; but it is worth remarking that her analysis of Problem 9 is wrong, though her answer is right. If her reasoning is correct, her answer is wrong. She has probably answered correctly by inverse ratio, and then failed in the analysis.

Carrie D. said:

3. *Six; he sold 8 in 4 days and 6 in 3 days, because he sold 2 in one day.*
6. *Eleven pennies are 11 pence, and 15 for 15 pence, because they were a penny each.*
7. *Because it took 8 in 4 and 4 in 2 because it's twice as much.*
8. *Because twice 8 are 16. I can't do it.*
9. *6 women take 2 days; 3 is half 6, and half 2 is 1.*
10. *3 times 5 are 15, because there was 6 apples in 2 there must have been 3 in 1.*

Carrie, by no means unambiguously, favours a method of unity: she adopts it in Problems 3, 6, and 10; but in Problems 7, 8, and 9 adopts a method of ratios, and in two of these cases unsuccessfully.

It is hardly necessary to multiply examples; these girls were chosen so as to present a fair sample of Standard IIa, and it would be what Americans call a conservative conclusion to say that the method of unity seems to these girls a very convenient method of analysis. It must, of course, be remembered that in the exercises of Step 5 they had been trained in this method of analysis: experiments with children who are entirely untrained would be more conclusive psychologically. But I have shown, I think, that pedagogically the method of unity is easy of adoption by young children: though I am not prepared to deny that, where the ratios are very simple, some problems may readily be solved by the method of ratios. In any case it seems that the conclusions from the general statistics of improvement from the use of the method of unity are not invalidated by the introspective evidence.

II. The Fourth Series of Experiments.

i. GENERAL CONDITIONS OF THIS EXPERIMENT.

The fourth series of experiments was also carried out in a girls' school, but one very differently situated from that just cited. This school was situated in a West-end "slum." The mental capacity of the children was well known to me from the results of a series of tests in Reasoning, and others in Substance Memory and Spatial Observation, which had been worked by every girl in the school. I have no hesitation in saying that, though there were a few children of good ability in the school, the mental level throughout was extremely low. The school contained nine class-rooms; all the classes were small and the pedagogical conditions were good. I am not personally acquainted with the number-work of the infants' department, but I have no reason to suppose that it was in any way below the average.

Can the younger or even the older classes of children in this school work problems in Arithmetical Proportion? To decide this issue *all* the classes of this school worked the problems. The questions were administered by the Head Mistress, who was very experienced in Experimental Pedagogy.

ii. THE TESTS, THE CHRONOLOGY OF THE EXPERIMENT, AND THE METHOD OF MARKING THE ANSWERS.

In this case precisely the same questions, identical in every respect, were used as in the South-east infants' school and the East-end boys' school, and they were administered and marked in precisely the same way. They began in the week ending November 23, 1912, and continued, once a week for each of the nine classes, with the necessary omissions due to school holidays, until the week ending April 12, 1913. Each class worked the successive exercises on the same day of the week on which it started and at the same time of day. The time of day was not precisely the same for all classes; such an arrangement would have been impracticable without a change of experimenters, but all the times chosen were good ones pedagogically. The exercises took the same time approximately as in previous cases, though there was, of course, an acceleration of time towards the end of the series, and especially with the elder classes. No rigid time limit is set in these exercises, since it is essential in all reasoning tests that children should be encouraged to do all they possibly can, and speed militates against this, though the reverse is the case with tests of purely mechanical work, which, indeed, is taken too slowly in most English schools of to-day.

iii. THE RESULTS OF THE EXERCISES IN THE GIRLS' SCHOOL OF THE WEST-END "SLUM."

I present the results in one summarized table. The reader will, by now, be familiar with the "Steps" and progress of the experiment, so that explanatory detail will no longer be necessary.

Table III.—Showing the average number of correct answers for all classes for each set of Problems.

Standard.	No. of Girls.	Average age on 31/12/12. Y.	M.	First Step.	Second Step.	Third Step.	Fourth Step.						Fifth Step.						Sixth or Final Step.			
				1st.	2nd.	3rd.	4th.	5th.	6th.	7th.	8th.	9th.		10th.	11th.	12th.	13th.	14tb.	15th.	16th.	17th.	18th.
I	38	8	0	4·1	5·2	1·1	1·1	1·6	2·0	1·8	2·7	2·7	*a*	2·6	2·2	2·4	3·3	2·7	2·5	2·6	2·3	2·2
													b	1·7	1·4	2·2	2·8	2·1				
IIb	38	9	1	6·6	7·9	2·0	2·5	2·9	3·9	2·7	3·6	4·0	*a*	3·3	3·1	3·0	4·1	2·6	2·8	2·8	3·6	3·4
													b	2·1	1·7	2·4	3·2	2·3				
IIa	37	9	1	7·6	8·2	2·9	3·2	4·3	5·8	5·4	6·4	5·8	*a*	4·8	4·7	4·2	5·8	5·3	4·2	4·4	5·0	4·8
													b	3·4	3·3	3·0	5·1	4·6				
IIIb	38	10	8	8·8	9·2	5·7	6·1	6·5	7·8	7·5	7·7	8·2	*a*	6·5	5·8	6·2	7·2	6·5	6·1	6·9	5·5	6·7
													b	4·3	4·4	5·1	5·5	6·0				
IIIa	45	10	6	8·6	9·6	4·7	6·1	6·7	7·1	7·1	7·4	8·1	*a*	6·6	5·9	6·0	7·2	7·5	5·8	6·8	6·2	6·8
													b	5·3	4·9	5·3	6·4	6·8				
IVb	46	11	9	9·6	9·7	7·7	8·3	8·1	9·1	8·9	8·7	9·1	*a*	8·1	7·7	8·4	8·7	8·9	8·2	8·4	7·9	8·4
													b	7·3	6·9	8·3	8·3	8·5				
IVa	44	11	8	9·7	9·7	7·6	8·5	8·3	8·7	8·7	8·7	9·2	*a*	7·5	8·1	8·2	8·9	9·4	7·7	8·8	8·4	9·0
													b	6·8	6·7	7·6	9·0	9·3				
V	42	12	6	9·3	9·8	7·7	9·2	9·0	9·5	9·5	9·4	9·7	*a*	8·2	8·6	8·8	9·3	9·4	9·2	9·5	8·6	9·5
													b	7·1	7·9	8·7	9·0	9·6				
VI	33	13	1	9·5	9·7	8·2	9·3	9·3	9·7	9·8	9·7	9·8	*a*	8·8	8·6	8·6	9·6	9·5	8·7	9·4	8·2	9·2
													b	7·9	8·3	8·5	9·4	9·4				

An inspection of the table speedily shows that we are dealing with children who are of very inferior ability. No class in the school is graded above Standard VI, nor could any class reasonably be graded above that. The children are very old for their "standards" or classes, and notwithstanding that, it is not until Standard III is reached that any question can arise as to the advisability of teaching arithmetical proportion. Standards I and II are clearly below the necessary level; but Standard III in both sections appears to have succeeded sufficiently to make the undertaking worth while. Even then the IIIb class, the older section of the standard, makes very little improvement, as shown by a comparison between Exercise 3 (the reader will remember that this test was a trial, as it were, of initial endowment in giving numerical answers to complete proportion sums) and the final exercise. It is worth noting that similarly the older section of Standard IV also starts higher and finishes lower than the younger section of the same standard. A similar relation exists between Standards V and VI. *Evidently we need two measures for accurate grading– (1) Initial Endowment, and (2) Improvability, considerations to which I alluded in my last paper.* One or two points of subsidiary interest may be noted. Between the 5th and 6th exercises, an interval of more than two weeks holiday occurred; yet, taught by practice in this way, the girls do not fall back, but improve very considerably upon their previous record. Between Exercises 16 and 17, a ten days Easter holiday occurred, and it seems at first sight as though the fall, which teachers expect after a holiday, had in this case taken place. But this is Exercise 17, whose results appeared so difficult to understand in Standards II, III and IV of the boys' school. Some of these problems, I then suggested, must have been harder than usual, though I am not able at present to say wherein the increased difficulty (if any) lies. But both initially and finally the girls of this school have shown very poor results; and I have thought it advisable, for the use of teachers, to tabulate the initial results in numerical proportion—those of Exercise 3, problem by problem, and class by class. They will give, as it were, a sort of lower limit, below which few, if any, elementary schools, however unfavourably circumstanced, might be expected to fall.

iv. The Initial Results of the Girls' School in the West-end "Slum."

I have not hitherto printed the problems of the 3rd Exercise, nor is it necessary to do so now: they may readily be obtained from those of the First Step by the method illustrated on page 84 of the June (1913) issue of this Journal. The problems of the First Step are given *in extenso* on page 83 of the same issue. The analysed results follow:—

Table IV, showing the percentage of correct answers to Exercise 3, problem by problem, and class by class.

Standard.	No. of Girls.	Average age on 31/12/12. Y.	M.	No. of Problems. 1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
I	38	8	0	31	3	17	11	0	34	11	6	0	0
IIb	38	9	1	52	15	24	21	9	45	6	18	12	3
IIa	37	9	1	56	24	36	24	24	36	36	27	13	15
IIIb	38	10	8	78	66	53	59	69	75	59	75	3	38
IIIa	45	10	6	29	23	19	25	19	36	25	28	2	8
IVb	46	11	9	98	88	85	76	85	98	95	90	5	61
IVa	44	11	8	97	87	79	67	79	95	87	97	13	64
V	42	12	6	95	90	98	76	83	93	88	85	15	44
VI	33	13	1	97	97	94	70	94	97	87	81	17	92

Besides affording a table wherewith comparison with other girls' schools may be made, the table shows us how the younger sections of the Standards III and IV start definitely below the older sections, and how Standard V is initially below VI. In all cases, however, the final positions are reversed, as may be seen from Table III. Though this improvability or educability is as important a factor in good classification as initial endowment, I can well understand that the interest of teachers will attach itself rather to the figures which show the comparative difficulty of the ten problems which comprised each set of questions. The best way to approach this aspect of the evidence is to write down the problems in full in the way already explained, and consider the results, problem by problem. The *first* problem is obviously easy, and well within the experience of these children, who commence "shopping" at an early age. The *second* is rather more difficult; "yards" are probably outside the range of the younger children, though clothes-lines certainly are not. The *third* again falls well within their "shopping experiences," and is relatively well done even by the younger children. The *fourth* is a problem in inverse proportion, and is done better than I should have expected, though it bothers the older children a good deal. It certainly concerns an issue which is a very practical one for the families to which these children belong. The *fifth* gives a good deal of trouble to the younger children. It appears that by a method of unity halves are involved, though it is easy enough by a method of equal ratios. The low result is an indirect evidence that the method of unity was adopted. The *sixth* is extremely well done: it works easily by a method of unity, and falls within their practical experience. The pounds of flour or the relationship of the "numbers" of the *seventh* problem appear to cause difficulty. The *eighth* problem, though one of direct proportion, and within the experiences of the children, works out with difficulty by a method of unity. The *ninth* problem causes failure throughout. It is a problem in inverse proportion, and my surprise attaches rather to the relative success of the children in Problem 4, which is also an "inverse proportion," than to their failure in Problem 9. Untaught in this form of problem as the upper classes evidently are, they are scarcely better than the lower classes at the commencement of the series. The results of the *tenth* problem are worse than I should have expected. The numbers seem too difficult, and the problem is outside the immediate experience of the girls. Let me make two comments. Firstly, that children need not be limited, and should not be limited, to their own childish experiences in the material of proportion sums, though one may well begin with such problems. Secondly, that the dexterous manipulation of number is of great help in obtaining correct solutions to even the simplest problems, a manipulation which, in recent years, English schools have shown too great a tendency to contemn.

III. The Arithmetical Ability in Proportion of Young Boys and Young Girls Compared.

There is a tendency in some quarters to admit arithmetical proportion as suitable for young boys, but not as suitable for young girls. That is why I have done the bulk of this work in girls' schools. But I am fully prepared to admit that I have not really made any valid comparison between the work of boys and girls as such. To do this we must deal with the boys and girls belonging to the same race, the same social class, and exposed to the same pedagogical influences under the same teachers. To obtain these conditions, I must refer the reader back to the Infants' School in which the *First Series of Experiments* was made. The class we worked with contained boys and girls in equal numbers, and was a fair sample for comparative purposes of the seven-year-old children in the school; in fact, it contained five-sixths of them. A comparison of the work of the boys and girls in *all* the tests, extending over a period of several months, will be of considerable value. In order not to overweight this paper with statistics I shall give summaries only; but, of course, the work of the girls and boys was really tabulated for every problem separately, that is for 180 problems. It has not been necessary to reduce the results to percentages, since the number of boys and girls was equal.

Table V, showing for each Set of Problems separately the Work of Seven-year-old Boys and Girls compared.

Maximum=240 in each case.
No. of Correct Answers.

	Girls.		Boys.	
First Step.				
Exercise 1		190		182
Second Step.				
Exercise 2		205		195
Third Step.				
Exercise 3		101		97
Fourth Step.				
Exercise 4		118		131
„ 5		114		136
„ 6		141		146
„ 7		148		162
„ 8		155		178
„ 9		163		177
Fifth Step.	(*a*)	(*b*)	(*a*)	(*b*)
Exercise 10	135	79	151	96
„ 11	159	127	161	111
„ 12	137	115	153	122
„ 13	180	148	183	151
„ 14	187	176	191	166
Sixth Step.				
Exercise 15		142		128
„ 16		161		146
„ 17		174		159
„ 18		182		176

Considered as a whole, there is no clear difference between the boys and girls, but there is one difference which does seem to emerge from a consideration of these figures. In Steps I, II, III and VI, the steps in which analysis is not made to or from unity, the girls are better in every exercise. On the other hand, in Steps IV and V, the boys are superior, especially at first. Can it be that the usual claim that males are more analytical and girls more intuitive in apprehension is supported by these simple tests? But this is a side issue, even if it be an interesting one: the conclusion especially relevant to the present research is the lack of difference in results between young boys and girls, even in *problematic* arithmetic, in which boys are usually expected to show superiority. In later years I believe they do, but whether as a result of nature or nurture I am at present unable to say; possibly the more analytical habit, if males really possess it, may lead to greater ultimate success, though it has not done so in these exercises.

IV. Fifth Series of Experiments.

i. GENERAL CONDITIONS OF THE EXPERIMENT.

It has hitherto appeared that arithmetical proportion might profitably be undertaken in a poorly-situated junior boys' school with the upper part of a Standard II class, providing the two sections of the class can be taught separately; also with much the larger part of a Standard II class of a girls' school situated in a fairly good neighbourhood; but not until Standard III is reached can it be profitably attempted in a "slum" girls' school. The Head Master of the boys' school, however, who was an enthusiastic and energetic man, raised the following issue: "Suppose," he said, "Standard I does the work one year and fails. Will not the work already done, though unsuccessful, make its success in Standard II a certainty next year?" The answer to the question was obtained by going through the whole series again (omitting Standard I), beginning a month after the reorganization of the classes at the end of March, 1913.

ii. THE TESTS: THEIR CHRONOLOGY AND THE METHOD OF MARKING.

The tests were identical in every way with those set in the infants' school and in the "slum" girls' school, and were precisely the same as those used during the previous educational year in the boys' school in which these further exercises were done. The method of working was also precisely the same. The Series began on the 9th of April, and a set of problems was given once weekly, with the necessary intermissions for holidays, which were, during this part of the year, of considerable number, since Jewish holidays are taken in this school as well as the usual municipal school holidays, until the 7th of October.

iii. RESULTS OF THE SECOND YEAR'S EXPERIMENT IN THE BOYS' SCHOOL.

The table of results which follows is arranged so as to be easily comparable with the table of results for the work of the same school in the previous year, given on page 323 of the June issue of this Journal for 1914:—

Table VI.—Showing the average number of correct answers for Standards II, III and IV for each Set of Problems in the Experiment of the Second Year. Maximum Mark, 10.

Standard.	No. of Boys.	Average Age on 30/4/13.	First Step.	Second Step.	Third Step.	Fourth Step.						Fifth Step.						Sixth or Final Step.			
		Y. M.	1st.	2nd.	3rd.	4th.	5th.	6th.	7th.	8th.	9th.		10th.	11th.	12th.	13th.	14th.	15th.	16th.	17th.	18th.
II	60	8 1	8·8	8·8	4·8	6·3	6·6	7·5	7·2	7·2	7·8	*a*	6·4	6·7	6·6	8·1	6·5	5·4	6·1	5·6	5·9
												...	...	...	...	...	...				
												b	5·0	5·1	6·3	6·9	5·8				
III	60	9 0	9·2	9·3	6·1	8·3	8·4	8·7	9·2	9·0	9·2	*a*	8·0	8·2	8·1	8·9	8·3	8·2	8·2	7·8	8·2
												...	...	...	...	...	...				
												b	7·1	7·7	7·8	8·5	8·0				
IV	58	9 11	9·4	9·7	7·7	9·4	9·5	9·6	9·7	9·5	9·6	*a*	9·1	9·3	9·0	9·3	9·1	8·6	8·8	8·5	8·6
												...	...	...	...	...	...				
												b	8·5	9·1	8·9	9·0	9·0				

Quite obviously the work of the preceding year has not been thrown away. Reference to the table previously given will show, in conjunction with this one, that the second year's results are decidedly better, though these children are younger, standard for standard. Even the Standard II boys appear to begin where the Standard I class left off the previous year; with few exceptions, of course, the Standard II class of this year consists of the same boys as the Standard I class of the year preceding. But the improvement of the Standard II class is small, namely, from 4·8 (3rd Exercise) to 5·9 (18th Exercise), and I am still of opinion that Standard II as a whole has not sufficiently profited by the work, notwithstanding its previous year's practice, as to include arithmetical proportion within its curriculum. The conclusion remains as before. The upper section might undertake it, if it could be taught separately. As a matter of subsidiary interest, the probable effects of holiday intervals may be mentioned, though the lack of *perfect equality* between the exercises, even between those of the same step, makes inference somewhat precarious. Between Exercise 1 and Exercise 2 there was an interval of two weeks, with a rise in result; but Exercise 2 is, of course, easier than Exercise 1. Between 7 and 8 there was a week's interval, with a slight fall; between 11 and 12 a week's interval with a slight fall; between 12 and 13 a four weeks interval with a very decided rise, though, from a comparison with results from other schools, it may indicate that part at least of this rise may be due to the possibly easier nature of the set of problems known as Exercise 13. But generally there is no doubt that this series of tests gives no ground for the assertion often made by teachers that after a holiday the children have forgotten all about it. How far this is true with lessons of instruction, I do not know: it is evidently not the case with lessons of practice in which the child is himself actively engaged.

V.—Summarized Conclusions from the First, Second, Third, Fourth and Fifth Series of Experiments.

1. Arithmetical Proportion with small numbers may profitably be undertaken at an earlier age than is now customary.
2. From the results of the earlier exercises in the fairly well situated girls' school in which harder numbers were used, it appears that the numerical relations involved form a very considerable part of the difficulty of such problems.
3. In all cases the Cost in Teaching Power, in School-time and in Fatigue is small by the method of procedure adopted.
4. The Method of Unity is justified by experimental evidence, collected over a wide field and throughout a considerable period: it is also justified by introspective evidence.
5. Contrary to general opinion, holiday intervals make little difference to the work of the children, provided that they are taught by practice and the exercise of the more active sides of their nature, and are not merely recipient of information.
6. No clear difference in the capacity to do this work exists between very young boys and very young girls.
7. The pupils of schools of very low social class—" slum " schools "—cannot, even in the most favourable pedagogical circumstances, be expected to undertake the work at as early an age as others.

NOTES ON THE SIGNIFICANCE OF RHYTHM IN PLATO'S SCHEME OF EDUCATION.

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I propose to gather together some passages from Plato in which rhythm is discussed. To select them is a difficult task, for two reasons—first, that they are very numerous, and second, that to tear them from their setting is to rob them of part, at least, of their beauty, and, with their beauty, of their meaning. Many of the passages which I shall quote are, however, so familiar that the context will easily be recalled, and for all I shall give references by which they may be restored to their proper places in the arguments in which they appear.

To begin with, there is the memorable passage in the Laws (II, 653): "What men say is that the young of all creatures cannot be quiet in their bodies or in their voices; they are always wanting to move and cry out . . . But whereas other animals have no perception of order or disorder in their movements, that is, of rhythm or harmony, as they are called, to us the Gods who, as we say, have been appointed to be our partners in the dance, have given the pleasurable sense of harmony and rhythm, and so they stir us with life, and we follow them and join hands with one another in dances and songs, and these they call choruses . . . Shall we begin with the acknowledgement that education is first given through Apollo and the Muses?"

Here we note that the sense of harmony and rhythm is pleasurable; that it distinguishes men from other animals, that it is given to men by the Gods, that it prompts us to certain kinds of movement (dances, in which the Gods are our partners) and of utterance (viz., songs). And it would appear that the cultivation of this twofold sense is the business of education, itself a behest of Apollo and the Muses.

If we enquire more closely, as we must, what education is, we are at once told—it is "that training which is given by suitable habits to the first instincts of virtue in children, when pleasure and friendship and pain and hatred are rightly implanted in souls not yet capable of understanding the nature of them, and who find them, after they have attained reason, to be in harmony with her. This harmony of the soul, when perfected, is virtue; but the particular training in respect of pleasure and pain, which leads you always to hate what you ought to hate and love what you ought to love from the beginning to the end, may be separated off, and will be rightly called education."

There are, then, certain instincts of virtue in children; they are the rudiments of complete virtue, which is a harmony of the soul. Towards complete virtue we are led by a training which creates in us a habit of acting towards what is pleasant in one way, and in another towards what is painful, learning the while to entertain for what is pleasant the feeling of friendship, and towards what is painful that of hatred, and discovering at last that our habitual feelings and the actions which correspond with them are consonant with Reason. Education is a process of training in love and hatred, guided by authority, and ending in an ordered freedom for which the name is harmony.

Education is no process of technical equipment; it is a preparation for a life in which the fully-developed individual finds scope for his powers and realizes himself in the society and in the service of his peers, his fellow citizens. This is the work for which we must train our youth.

I quote next from the Republic III, 401. "If our youth are to do their work in life (they must) make . . . graces and harmonies their perpetual aim . . . All life is full of them as well as every creative and constructive art, painting, weaving, embroidery, the art of building and the manufacture of vessels, as well as of the frames of animals and of plants—in all of them there is grace or the absence of grace. And absence of grace and inharmonious movement and discord are nearly allied to ill words and ill nature, as grace and harmony are the sisters of goodness and virtue and bear their likeness."

Grace and harmony are everywhere to be sought—not only in what we call the character and the conduct of men, but in all the works of their hands, in the arts and manufactures, and also in the structure and movement of animals and plants. They are the criteria of excellence, and are of kindred with goodness and virtue. It would not perhaps be amiss to speak of the virtue of a well-planned building or an exquisite tapestry, the goodness of a splendid horse or a lovely flower, since it is not amiss to speak of the beauty of right conduct or of noble character. Moral and æsthetic values are here brought very close together, if they are not indeed identified; and education is to be had in all the experiences which the world affords, for in all of them discrimination between good and bad, beautiful and ugly, pleasant and painful, must be made.

But some parts of education are specially valuable in themselves and specially useful as instruments of training since they are more completely under the control of the State itself, which is the chief agent in education, and of those of its ministry whose main duty is the care of the young. This part of education has two branches—Music and Gymnastic—conveniently separated one from the other, though Gymnastic is subordinate to Music, as the body exists for the sake of the soul. So we read (Rep. III, 401): "Musical training is a more potent instrument than any other, because rhythm and harmony find their way into the secret places of the soul, on which they mightily fasten, imparting grace, and making the soul graceful of him who is rightly educated, or ungraceful of him who is ill educated; and also because he who has received this true education of the inner being will most shrewdly perceive omissions or faults in art and nature."

The first instincts, as Plato calls them, of virtue, imply and depend for their existence and their development upon a certain critical quality, which discerns, through affections of pleasure and of pain, the good and the bad. It is to the fostering of these instincts that education directs itself; and the progress of education is measured by the gracefulness of the soul, which, becoming more and more graceful, becomes in the same process more and more critical.

The criterion of virtue and of beauty must be something personal and individual, a criterion based upon the pleasure or the pain of every person who can be moved by these affections. It is, it would seem, a question of taste, and about taste, whether in its simplest sense or in its most sublime meaning, there can be no argument. It is not easy for a man to describe a taste appreciated by his own palate; and if he did describe it in words satisfactory to himself and intelligible to another, it is not possible to prove that the taste which he describes as "sweet" or as "bitter," even though his neighbour acquiesces in the description, is the same taste which his neighbour detects and discriminates from others of his own palate. And yet for common agreement no appeal is more direct or convincing, and this not only in the physical realm, but in other realms open to human exploration. "Taste and see" we say about things to eat and drink—expecting agreement with our own taste, but not questioning the possibility, and if it occurs, the propriety and genuineness of a taste different from our own. But these very words are used in an instance where genuine disagreement is not admitted as a thing to be conceived: "Taste and see that the LORD is good."

In this instance, it is imagined that difference is impossible; and the reply to a dissentient would be that he had not *really tasted* and seen. What it involves is not less than the claim that in the highest region judgment or taste is at once intimately personal and at the same time common and, indeed, universal—unless we say that some tastes are denied to some capacities, or, with less risk of provoking opposition, that some capacities are less large and less sensitive than others in certain respects. And if we accept either of these alternatives, we should find it convenient to give to those persons in whom the apprehension, capacity or taste in question exists, or exists in a high degree of discrimination, some special name. We cannot call them religious persons, without confusion; we may perhaps, at any rate for the moment, call them saints.

To the considerations just raised we may presently return. The critical mind criticizes even the instrument which is intended to increase his critical power. Music is such an instrument—music including letters, poetry, history, rhetoric, and every kind of art—but music itself is judged; and we have to ask by what standard it is to be judged. Clearly there can be but one, namely, pleasure. I quote again (Laws V, 658): "The excellence of music is to be measured by pleasure. But the pleasure must not be that of chance persons; the fairest music is that which delights the best and best educated, and especially that which delights the one man who is pre-eminent in virtue and education."

This is surely argument in a circle. Perhaps it is; but perhaps it is argument, so to speak, in a spiral: we have come round, not, in fact, to our starting point, but to a point immediately and vertically above it.

We have now a fresh enquiry: where is "the man pre-eminent in virtue and education?" and yet another: "how are we to recognize him?"

We may be aided in our search for him, if we can in imaginative forecast present him to our minds. The quality and the preparation of the truly musical person are set before us in such a passage as that in Rep. III, 402: "Neither we nor our guardians whom we have to educate can ever become musical until we and they know the essential forms of temperance, courage, liberality, magnificence, and their kindred, as well as the contrary forms, in all their combinations, and can recognize them and their images wherever they are found, not slighting them in small things or great, but believing them all to be within the sphere of one art and study." It is clear that the educated man draws into a single art or study all the lesser arts as we know them by their several names, and also the elements of what we call morality or virtue; and everywhere "in small things or great" he will be quick to perceive the presence or the image of artistic or of moral law. And this habit of mind by which he harmonizes goodness and beauty may have, indeed must have, a similar effect of harmony upon himself, compact as he is of body and soul. So Plato continues: "And when a beautiful soul harmonizes with a beautiful form, and the two are cast in one mould, that will be the fairest of sights to him who has an eye to contemplate the vision. And the fairest is also the loveliest, and the man who has the spirit of harmony will be most in love with the loveliest."

To him who has an "eye to contemplate" the vision will be granted.

Who, we may ask, is to enjoy the spectacle, to gaze upon "the fairest of sights?" It is only he who is himself of kindred with that upon which he looks, whose own soul, fitly mated with a beautiful form, has been moulded to the fashion of the spiritual beauty which he contemplates. Such a seer will blend the temper of admiration or even of adoration with that of criticism or even of scepticism. He will not yield, he will feel indeed no temptation to yield to a flaccid sentiment of vague and valueless admiration; he will not offer exuberant praise where modest commendation is appropriate, nor polite acquiescence where repugnance and condemnation should be provoked. He will exhibit, because he will possess, the character of the watchdog. Philosophic, he will distinguish his friends from his foes; but he will very happily admit that his foes are strangers, and quickly discover that to bring them into friendship all that is needed is that he should come to know them. He will love knowledge, and not less the process of getting knowledge, and the transformation which he achieves in turning the unknown and the hostile into the well-known ally and friend will delight him, not only by its result, but as it proceeds. For his scepticism is not a negative thing: it is creative. Looking shrewdly at or through the form of the stranger, he penetrates to his heart, and there finds what he postulates something to recognize—something that he has known before, but was for a moment hidden from him. The knowledge of good and of evil, fearlessly pursued by ingenuous minds, turns out to be knowledge of good, residing unimpaired at the heart of things, and revealing itself at last to friendly eyes, and with a triumphant self-surrender transfusing the veils which obscured it, re-shaping the mis-shapen form that held it, to accept and return the welcome of the philosophic mind.

How, then, is this character, this mind, to be brought into being, and by what training is it to be brought to its just perfection? This is the business of education, a national concern, entrusted to the guardians of society. It is to be observed that the guardians have something to safeguard: a society, a state, has been established, and such stability as it has it owes to its conformity to certain laws. Its stability is threatened by the invasion of lawlessness, which may either take the state by storm, or—a subtler and more serious peril—creep in upon it stealthily and by almost imperceptible degrees. Against the danger the guardians (Rep. IV, 425) must build a fortress, and lay its foundations in music. The beginning of music will, for children, include their games, their stories, told to them or made up by themselves, and all the show that they put into their little stage of make-believe. They must learn to play prettily, and simply; their play must be of a law-abiding kind; so that thus early, and before they have been able to see the reason for it, they may have got the habit of orderliness. They may then re-discover, what Plato complains had been lost in his day, the "minor moralities," as Dr. Bosanquet brilliantly renders his words. "What are these?" the question is asked; and the answer is worth quotation: "The proper habits of silence in the young before their elders, and offering them a seat, and standing up when they enter, and respect for parents, and haircutting, and dress and shoes, and, in general, the personal appearance and everything of that kind." All this is not matter for legislation; it is to be secured through the discipline of common sense used lightly with imaginative freedom, used firmly with religious severity by parents or teachers, who, respecting themselves, respect their children also, and pay in advance a tribute to the understanding which they will one day possess, by making them obey a law which they do not yet comprehend. So education is begun, by the imposition of law at the hands of authority, an imposition so consistent that not even the spontaneous play of children escapes its control, yet so gentle and wise that play is not robbed of its natural gaiety. The reason of the law, it is perhaps not unnecessary to repeat, is not within the understanding of those on whom it is imposed. Plato never adopted the consecutive arrangement of topics illustrated by the writers of text-books for examinations, and here, following his own inspiration, he turns at once from the beginning to the end of education.

What more have we to do—he himself raises the question, reverting now to themes with which he has been occupied before he wrote down the passage to which I have just now made reference—what more have we to do in our legislation? We have to accept for ourselves with the easy and cheerful dutifulness of disciplined children the enactments of an authority which we understand as little as they understand that which constrains them. "Nothing remains for us; but for Apollo, the God of Delphi, there remains the ordering of the greatest and noblest and chiefest things of all . . ." "The institutions of temples and sacrifices, and the entire service of gods, demigods, and heroes; also the ordering of the repositories of the dead, and the rites which have to be observed by him who would propitiate the inhabitants of the world below. These are matters of which we are ignorant ourselves, and as founders of a city we should be unwise in trusting them to any interpreter but our ancestral deity. He is the god who sits in the centre, on the navel of the earth, and he is the interpreter of religion to all mankind" (Rep. IV, 429).

I shall not now inquire whether or not this is paradox, this ending of a process by which the mind is trained to the use of reason in the unquestioning acceptance of a ritual, consecrated by tradition, enriched by unbroken observance, as the fixed form of reverence paid to things of which, as Plato puts it, "we are ignorant." It is, I think, at any rate clear that for Plato this was no paradox. He is guiltless of the mean logic which calls itself consistency, and is consistent only in its constant insensibility to the throbbing, vitalizing darkness which surrounds the lucid realm of reason and by closing gives it definition.

We find from reflection on the passages which have now been cited that a space is marked out in which freedom, guided by intelligence, has its play; and that this space is bounded on either side, at the beginning and at the end, by authority which is to be obeyed. This authority is to be obeyed in ignorance, but we have to remark that this is an ignorance which does not violate freedom or damage intelligence. For children acquire and learn to use the gifts and arts of freedom under the direction of a control which, at first external to themselves, they gradually make their own as they become truly members of the society into which they are born; and this control, by curbing licence, indicates the avenues in which power may be well employed, and by offering the contrast between fruitful and fruitless effort makes the nascent intelligence aware of itself. And when such freedom as men may enjoy, used with intelligence, quickened and matured by experience, has reached what seems to younger eyes a range unlimited, there is revealed to eyes refreshed by wisdom and undimmed by experience a limit set by law, to be admitted and revered, not as a hard boundary against which the baffled will may break itself in impetuous and impotent assault, but as the condition upon which ordered activity depends. This measured sway from control to control, through a broadening tract of freedom, is rhythm conceived in its largest terms. This, if I understand aright some passages which will presently be quoted (and many others which seem to bear the same sense might very easily be added), is what Plato calls *good* rhythm. It alone justly deserves the name, but to distinguish it, where distinction is very needful, from counterfeits, he gives this the name of *good.* The counterfeits he calls *bad rhythms.* We have therefore to inquire what is the difference between good and bad rhythms. In both we are to recognize the action and reaction of freedom and of control; but in the good, control and freedom are kindred from the first, and time and experience discover more and more fully the intimacy of their relation; whereas in the bad, control is mere necessity and freedom mere licentiousness.

Let us take first a passage from Rep. III, 400: "Grace, or the absence of grace, is the effect of good or bad rhythm accompanying good or bad style, and the same is true of good or bad harmony; for our principle is that rhythm and harmony are regulated by the words and not the words by them . . . The words and the character of the style will depend on the temper of the soul, and everything else on the style. Good language and harmony and grace and rhythm depend on simplicity. I mean the simplicity of a truly and nobly ordered mind, not that other simplicity which is only a euphemism for folly." If for *words* we say *meaning*, the interpretation of the passage is made clear. Significance must determine form, and form must obey and express significance. This is not to say that we can translate into words the meaning of a piece of music, or render a poem into prose; but it is to say that some meaning must be there, and that the form is, if it is perfect, the one apt expression for that meaning. Again, it is the meaning of a mind which by a noble discipline has attained simplicity.

The same doctrine appears to be maintained in a well-known passage of the Laws (II, 656-7), where Plato describes the regulations enforced in Egypt in regard to music and dancing. "I know," he says, "other things in Egypt are not so good; but what I tell you about music is true and deserving of consideration." "What are the laws about music and dancing in Egypt? You will wonder when I tell you. Long ago they appear to have recognized the very principle of which we are now speaking—that their young citizens must be habituated to forms and strains of virtue. These they fixed, and exhibited the patterns of them in their temples; and no painter or artist is allowed to innovate upon them, or to leave the traditional forms and invent new ones . . . no alteration is allowed either in these arts, or in music at all." Let us interrupt Plato for a moment. Clearly he maintains that modes of dancing and of music are the expression of character, but not the expression merely of individual character; they are that, but they are more than that. They are the expression of a national character, which the individual takes on himself as he comes to complete self-understanding and self-development—an expression, settled by use, sanctioned by authority, and yet consistent with the individuality of those who in successive ages adopt it, an expression which indeed serves the double purpose of maintaining unimpaired the character of the society in which and for the uses of which it has been formulated, and within the general framework of that social or national character, of providing the opportunity to its members of realizing their oneness with society while carrying to the utmost limits of ordered originality their personal qualities. There may be varieties of style within the common convention. The sentences which follow demand and deserve a close study: "A lawgiver," Plato continues, "may institute melodies which have a natural truth and correctness without any fear of failure." This surely is a great claim to make for the lawgiver. Let us note that he is a lawgiver, handing on to others what he has himself received. "To do this"—I resume the quotation—"must be the work of GOD, or of a divine person." The careful reader will not miss the reverent irony, the humorous submission, the effrontery of faith, in the concluding lines: "In Egypt they have a tradition that their ancient chants are the composition of the goddess Isis. And . . . if a person can only find in any way the natural melodies, he may confidently embody them in a fixed and legal form."

To guard ourselves against the risk of misunderstanding Plato when he speaks about the lawgiver, we must remember that for the Greek States the name of a half-legendary, half-historical, and remote founder was associated with the ideas which for us are called to mind by the word constitution. To violate the constitution, if we may pass from the language of our own time to the figurative language held by Plato, is to disobey the lawgiver.

It is hardly a contemporary person of whom he speaks, but rather of a person to whom distance has lent a certain enchantment and dignity. Yet the functions of the traditional lawgiver are to be fulfilled by officers of the State, of whom the most important (Laws VI, 765-6) is the Minister of Education, who is concerned not with the department of national or of social life, but with the whole of it, and is the representative to his contemporaries of the traditional law-giver, and dependent like him for the successful discharge of his duties on nothing less than the inspiration of the gods.

In a memorable passage of the Republic (III, 395; see also IV, 421), Plato tells us that the Guardians of the State are to be "consummate artificers of freedom," and it is because they are the living depositaries of tradition that they achieve for the State the liberty which it must have if its obedience to law is to be vital. Here again we have the same great principles of rhythm illustrated. The resultant of control and of self-expression is not the resultant of opposed but of combined forces.

To this consideration we may presently return. At present we remark that education is a sacred and serious occupation, because it is an artistic occupation. Before choosing your minister of education you resort to the temple of Apollo. The doctrine put forward in some of the passages already cited, that the rules or laws of art are a kind of nature, or a principle of life, suggests or is suggested by another doctrine of wider scope. It is that life itself is an art. In an early passage of the Republic (I, 342 *et seq.*), Plato speaks about the disinterestedness . . . of art, and here he is thinking of the several professions and occupations of men—the art of the shepherd, or the art of the practitioner in any department of human activity. There is a general art of life in which all men are engaged both as individuals and also as members of a community which embraces them. The lawgiver is he who sets the music, who gives the tone and determines the modes of this supreme art. He is the subject of a sacred frenzy in which order, become habitual, is raised to the level of passion, and he is entitled to impose his command upon lesser men than himself because he is himself clothed with an authority not his own. It was apparently a circumstance not unknown in Greece, that small offices should seem to give immense importance to still smaller men, who, to adopt Plato's image, believed themselves to be six feet high, because flatterers, built upon an even lower scale, continually told them that they were of that very respectable height. But the true lawgiver is like the poet; indeed he moves upon a larger and a loftier plane: with the gods or the heroes we may dare to compare him. The poet, says Plato (Ion, p. 534), "brings songs from honeyed fountains, culling them out of the gardens and dells of the muses; like a bee, he wings his way from flower to flower. The poet is a light and winged and holy thing, and there is no invention in him until he is inspired and is out of his senses and the mind is no longer in him; when he has not attained to this state he is powerless and unable to utter his oracles." A further passage from the same dialogues emphasizes the same teaching, and supplies an example. "GOD takes away the minds of poets and uses them as his ministers, as he also uses diviners and holy prophets in order that we who hear them may know them to be speaking not of themselves who utter these priceless words in a state of unconsciousness, but that GOD himself is the speaker, and that through them he is conversing with us. And Tynnichus, the Chalcidian, affords us a striking instance of what I am saying: he wrote nothing that anyone would care to remember but the famous pæan which is in everyone's mouth, one of the finest poems ever written, simply an invention of the Muses, as he himself says." The lawgiver is numbered among these diviners and holy prophets.

In the ordered state, the embodied harmony of human activities, there will be differences of function, and the differences will be recognized. On this Plato insists, as everyone remembers, with much gravity in the Republic. The stability of the state, he tells us, can only be maintained if everyone will mind his own business, and confine himself to that. And every man being governed by the conditions of his occupation will express himself in accordance with it. It is true that above the particular occupation or calling in which he is engaged, he has to practise the general art of life; but for the most part, he will avoid mistakes in life if he fulfils the claims and performs the duties of that station in which he is placed. But if the citizens are eager to remind themselves that they are human beings first and practitioners of the several arts after that, let them at least note that even if they are human beings, they must be either male or female, and not traverse the natural boundaries of their sex. In the Laws (VII, 802-3), an illustration not common in this context is used. "We must distinguish," we read, "and determine on some general principle what songs are suitable to women and what to men, and must assign to them the proper melodies and rhythms. It is shocking for a whole harmony (the harmony of society as a whole is meant) to be inharmonical, or for a rhythm to be unrhythmical . . . Now both sexes have melodies and rhythm which of necessity belong to them, and those of women are clearly enough indicated by their natural difference." In an earlier passage of the same dialogue (Laws II, 669) Plato contends that the Muses themselves would never make the mistake of confounding what is appropriate for men with what is suitable to women; but poets, being very much inferior to the Muses in character, make this, as he regards it, monstrous blunder.

Rhythm (Laws V, 665), Plato tells us, is the order of motion. It is motion given by freedom, but exercised under control. There need be no opposition between freedom and control, and when rhythm is good there is none. When rhythm is bad, control, as we have seen, is a gentle name for mere coercion. But if there is no essential opposition, there is still contrast between freedom and control. Motion implies a goal, not yet reached; control suggests the negation of motion. It is what Plato calls rest, or inactivity. Let me quote a difficult passage from Theætetus in illustration (Theæt. 153). We may easily see that "motion is the source of that which is said to be and become, and rest of not-being and destruction; for fire and warmth, which are supposed to be the parent and nurse of all other things, are born of friction, which is a kind of motion . . . and this is the origin of fire. And the race of animals is generated in the same way. And is not bodily habit spoiled by rest and idleness, but preserved for a long time by motion and exercise? And so . . . of the mental habit. Is not the soul informed and improved and preserved by thought and attention, which are motions; but when at rest, unstirred by thought or attention, the soul is uninformed and speedily forgets whatever she has learned."

Control means direction, it may be urged; but direction implies choice, and choice means rejection as well as acceptance Command is at the same time an order to do this and an order not to do that. It is this contrast that Plato illustrates; but not this alone. Motion, as we have seen, implies desire; but what when desire is fulfilled? Will motion be possible, is it conceivable then? Progress implies a destination; what when the destination is reached? Our notion of goodness seems to include the notion of progress. Will goodness cease to be itself when it has reached perfection? And again, rest means cessation from activity; yet rest is sought. We think of the alternation of rest and activity; it is one of the forms of the rhythmic balance of freedom and control, but may we not speak of the goal of endeavour as a repose which will never be disturbed; and if so, have we set before ourselves a mere negation as our end?

The question is asked, the dilemma stated, with indignant eloquence in the Sophistes (249): "O heavens, can we ever be made to believe that motion and life and soul are not present with absolute Being? Can we imagine Being (the fulfilment, that is, a perfection of all the objects of our effort and hope) to be devoid of life and mind, and to remain in awful unmeaningness, an everlasting fixture? . . . Or shall we say that Being has mind and not life . . . Or both, but that there is no soul in which they exist . . . Or that Being has mind and life and soul, but that although endowed with soul remains entirely unmoved . . . Then our inference is that, if there is no motion, neither is there any mind anywhere or about anything or belonging to anyone . . . And yet this equally follows, if we grant that all things are in motion, upon this view too, mind has no existence."

The answer to the problem is suggested later in the same dialogue (Sophistes 250): "Then you can conceive of Being as some third and distinct nature, under which rest and motion are included, and observing that they both participate in Being, you declare that they are . . . Being surely has communion with both of them."

So motion ends in passionate repose; and rest becomes instinct with tranquil emotion: the happy rivalry of contrasted forces is composed in a life which has the simplicity of art, and seeks nothing but the undisturbed colloquy of the mind with itself.

A PSYCHOLOGICAL ANALYSIS OF SCHOOL GRADING.

I.

By E. J. G. BRADFORD, B.Sc.

A GOOD deal of careful and laborious work has been done in an endeavour to find psychological tests which shall measure intelligence in children. The results obtained from the application of these tests have been compared both with school standing and with the teacher's estimate of the children's intelligence.

These comparisons have led to conflicting conclusions, some observers agreeing with Dr. Spearman that there is such a thing as General Intelligence, while others agree with Dr. W. Brown in finding that there is probably no such thing as General Intelligence.

Both school standing and the teacher's estimate are really rough averages of the individual's capability in several directions. Hence psychological tests have really been compared to average behaviour. It is an average, but an average of what? Little attention has been paid to the elements from which this average has been deduced.

Average behaviour, general efficiency, or general intelligence are resultants. This paper is a contribution towards the complete analysis of the factors which go to produce this resultant. The point of view is frankly atomic, it assumes that behaviour can be split up into fundamental elements and that intelligence is merely the resultant of these elementary processes.

The Subjects.—These experiments were conducted in a good London elementary school during the months of February and March, 1912. The results set forth below are those obtained from two classes of boys. Class 4 was described as a bright class, one distinctly above the average. Class 5 was an average class so far as school work was concerned.

The average age in Class 4 was 11·0 years ($\sigma = \cdot 6$ years), and in Class 5, 11·0 years ($\sigma = \cdot 95$ years). Thus these experiments deal with two classes of the same average age but of different intellectual attainments, Class 4 being one scholastic year in advance of Class 5.

In Class 4 there were 43 boys, and in Class 5 there were 45 boys. It was found that the grouping together of children of ages varying from 9 to 14 years affected the correlation coefficients, hence only those whose ages were between 10·6 years and 12·5 years were taken for the purposes of correlation. The numbers in the classes then were 37 and 31 respectively.

Method.—The tests were preceded on the first day by an oral explanation and a blackboard demonstration. The tests were applied three times a week (Mondays, Wednesdays, and Fridays) between 10 and 11 a.m. The results used here are the combined marks obtained at the seventh and eighth applications.

The Tests.—There were two groups of three tests. The first group was composed of tests which demanded of the subject some ability in the analysis and synthesis of visual forms. The second group were tests of association and memory.

R.M. Test.—The subject in this test was required to put a pencil ring round groups of three dots, which were fairly well separated out. This Ring (Motor) test was introduced as a control test for the Ring test. It involved motor co-ordinations but very little in the way of analysis.

R. Test.—In this Ring test, the subject was presented with an irregular array of dots and was required to put a ring round three dots as before (in the R.M. test), but he was penalized for omitting any dots or for putting a ring round more than three.

S. Test.—In the Schema test the subject is required to cross off from the groups of dots in any line those dots which do not appear in the pattern of dots at the beginning of that line.

B.A. Test.—This, the Backward Alphabet, is not a new test. It consists in requiring the subject to write down the letter in the alphabet which immediately precedes the stimulus letter. There were 20 stimulus letters.

F.A. Test.—The Forward Alphabet differs from the Backward Alphabet test only in that the letter required is the letter which succeeds the stimulus letter. As for the B.A. test, there were 20 letters.

O. Test.—The third test of the second group was the familiar Opposites test. Twenty words were given at each application of the test.

School Marks.—The results of the school examination, which took place a month after the tests were completed, have been used for comparison with the tests.

The average marks obtained by the two classes at these six tests are given below in Tables Ia and Ib. The σ and V (Coefficient of Variation $\left.\frac{100\,\sigma}{\text{mean}}\right)$ are also given. The figures in these two tables show that Class 4 was distinctly superior to Class 5 in all the tests except the R.M. and the S. tests. They also show that the upper class is relatively less variable in every test. This is probably partly due to the fact that there is less variation in the ages of the individuals composing this class.

TABLE IA.

Class	R.M.			R.			S.		
	Mean	σ	V	Mean	σ	V	Mean	σ	V
4	29·7	5·06	17·0	34·3	5·22	15·2	169	30·4	18·0
5	30·9	8·38	27·1	29·5	5·95	20·2	160	34·1	21·3

TABLE IB.

Class	B.A.			F.A.			O.		
	Mean	σ	V	Mean	σ	V	Mean	σ	V
4	16·6	4·58	27·6	11·1	2·83	25·5	27·6	4·77	17·3
5	10·9	3·15	28·9	8·5	3·35	39·4	20·6	5·10	24·8

That the differences in mean performance are significant and not due purely to chance can be seen from Table II. In every case, except the two mentioned above, the difference is greater than 3 P.E. Thus a difference of scholastic ability coincides with a difference in ability at the tests. It may be noted in passing that this difference is most marked in the memory tests.

TABLE II.

Test	Means		Difference		Difference ÷ P.E.
	Class 4	Class 5	Mean	P.E.	
R.M.	29·7	30·9	1·2	·99	1·2
R.	34·3	29·5	4·8	·81	5·9
S.	169	160	9·0	4·80	1·9
B.A.	16·6	10·9	5·9	·57	10·3
F.A.	11·1	8·5	2·6	·45	5·8
O.	27·6	20·6	7·0	·71	9·9

Tables III and IV show the relations which hold between the tests, in both classes. Those correlation coefficients which are less than three times their P.E. are printed in darker type, while those which are less than their own P.E. are placed in brackets.

The average coefficient obtained from Table III is ·30, whereas that obtained from Table IV is only ·18. This difference is due almost entirely to the fact that in the upper class the F.A. test correlates with every other test.

Within each group R.M., R., S., and B.A., F.A., O., the correlations are much higher than **between** the two groups.

Class 4. **Within**—Mean = ·46. **Between**—Mean = ·19.
Class 5. Mean = ·39. Mean = ·05.

TABLE III.—CLASS 4.

Test	R.M.	R.	S.	B.A.	F.A.
R.M.	—				
R.	·63	—			
S.	·34	·32	—		
B.A.	**·15**	[**·05**]	**·13**	—	
F.A.	·31	·44	**·27**	·61	—
O.	**·16**	[**·10**]	[·09]	·44	·41

TABLE IV.—CLASS 5.

Test	R.M.	R.	S.	B.A.	F.A.
R.M.	—				
R.	·50	—			
S.	·18	·15	—		
B.A.	[− ·11]	[− ·01]	[·02]	—	
F.A.	[− ·09]	− ·18	·19	·69	—
O.	·29	·18	·13	·43	·36

The relations between the various school subjects as tested by examination are given in Tables V and V1. The correlation coefficients are remarkably similar for both classes, except perhaps in the case of Composition. Arithmetic appears to stand in a different position from the other subjects. The average correlation of Arithmetic with the other subjects is only ·21, that of Writing, the next lowest, is ·31. Spelling gives the highest average coefficient ·43, Composition ·42, and Reading ·35.

Class 5, which gave the lowest average coefficient between the tests, gives the highest average coefficient between school subjects.

TABLE V.—CLASS 4.

Subject	Arithmetic	Composition	Spelling	Reading
Arithmetic ...	—			
Composition...	·24	—		
Spelling ...	·11	·36	—	
Reading ...	·26	·49	·43	—
Writing ...	·36	·20	·47	·11

TABLE VI.—CLASS 5.

Subject	Arithmetic	Composition	Spelling	Reading
Arithmetic ...	—			
Composition...	·21	—		
Spelling ...	·21	·84	—	
Reading ...	[·11]	·59	·56	—
Writing ...	·18	·41	·50	·24

Tables VII and VIII show the correlation coefficients between the school subjects on the one hand and the tests on the other.

Several important differences appear between the results obtained from the two classes. There are, however, two points of similarity, namely, the Association or Memory group shows a stronger positive correlation with school subjects than does the Visual group, and secondly the Opposites test gives the highest correlation with school subjects in both classes.

In the lower class, i.e., Class 5, the B.A. and F.A. tests give much higher coefficients than in the upper class. This may be accounted for in either of two ways. Either the work in the lower class depends more on rote memory (or the ability to recall practically meaningless associates), or else that rote memory is a much more important factor in discriminating between the members of a group of inferior intellects than it is in discriminating between those of a group having greater intellectual power. In other words, the superior intellect is less dependent on memory than is the inferior intellect.

In both classes the Opposites test correlates with Reading and Spelling to a marked degree.

TABLE VII.—CLASS 4.

Subject	R.M.	R.	S.	B.A.	F.A.	O.
Arithmetic...	−·17	[·09]	·27	·21	·21	·21
Composition	[−·09]	[−·05]	[·00]	[−·07]	−·15	[·00]
Spelling ...	·14	[·01]	·16	[·09]	[·10]	·43
Reading ...	−·17	[−·08]	[−·04]	·16	·18	·41
Writing ...	−·21	−·30	·15	[·00]	[·07]	·15

TABLE VIII.—CLASS 5.

Subject	R.M.	R.	S.	B.A.	F.A.	O.
Arithmetic...	[−·07]	·12	·40	[·08]	[·01]	·16
Composition	[·00]	[·08]	[·08]	·37	·44	·44
Spelling ...	[·01]	·12	[−·02]	·20	·61	·44
Reading ...	[−·11]	−·23	[−·04]	·36	·39	·38
Writing ...	[−·02]	[−·07]	[−·06]	·25	·28	·55

In the upper class the B.A. and F.A. tests do not. This shows that either *meaning* is an important element in these two subjects, and one that becomes more important as the intellect develops, or else in the upper class Spelling and Reading are less a matter of letters and more a matter of words than in the lower class.

By way of criticism it may be said that the ability to read was necessarily involved in the Opposites test, and also spelling may have hampered the individual when writing down the Opposites. This criticism can be met by pointing out that all the words used in the test were quite familiar to them, and that the class was told that no account would be taken of the spelling on the test papers. That this instruction was taken to heart can be seen by glancing at the papers. Also it was the seventh and eighth applications which are used here, hence the children were familiar with their work.

The recognition of the *form* of the word probably has less to do with good reading and good spelling than is commonly thought. Success at the Schema test necessitates the ability to apprehend *form*, and yet in neither class does this test correlate to any extent with either Reading or Spelling. From this we may conclude that though a certain limited ability to recognize *form* is essential in Spelling and Reading, yet it is not this factor which differentiates between the good and bad reader or speller.

For children of this age good writing does not correspond to the ability to make rapid, controlled movements with the pencil, at least not if the correlation between the R.M. test and Writing have claim to consideration. The ability to analyze and synthetize visual forms likewise has little to do with good writing.

Arithmetic in both classes correlates more closely with the Schema test than with any other test. One reason why Arithmetic correlates less closely with the other subjects than does, say, Reading, is probably to be found in the fact that these other subjects do not contain one of the elements of the Schema test.

In the Schema test the subject has to weave a pattern of dots into a figure, and also to recognize this figure in another group which contains superfluous dots, whose presence acts as a distracting influence. The solution of problems in elementary Arithmetic involves a somewhat similar process. The child concerned has to recognize a type or form of problem which is embedded in a mass of words. Both forms of activity involve what Stout calls Schematic Apprehension.

The Ring test requires very concentrated attention to secure any measure of success. In spite of this in neither class does this test correlate with school subjects (average $-\cdot 02$). Does this mean that the power to concentrate the attention does not play an important part in learning to read, write or spell? Or is it that the attention factor is masked by other factors? Whatever be the correct answer to these questions, these results rather tend to throw doubt on the validity of the view that attention and intelligence vary concomitantly.

It seems to be probable that all intelligent individuals must have a certain amount of control over their attention, but beyond this limited amount of control, attention is not a differentiating factor. Or else it is that an intelligent person makes up by other means any deficiency in the way of controlled attention.

TABLE IX.

Age—	Under 9y. 6m.	9y. 6m.–10y. 5m.	10y. 6m.–11y. 5m.	11y. 6m.–12y. 5m.	12y. 6m.–13y. 5m.
Class 4	0	6	24	13	0
Class 5	2	9	14	17	3

In Tables I and II it was shown that the upper class was distinctly superior at most of the tests given. In order to show that this difference is one of intellectual development, and not one of age, the 12 year old and 11 year old groups in both classes are compared in Table X.

Table IX shows the ages of the individuals in each class. Only the 11 year old and 12 year old groups are large enough to use for comparative purposes. For no test in either of the classes does the 12 year old group have a mean performance greater than the 11 year old group, where the difference is as great as 3 P.E.

In every one of the Association group of tests the difference between the two groups is greater than 3 P.E. This shows that the control of the associated pairs, as tested by the Association tests, is not a matter of age, but of intellectual development. Association, it will be noticed, coincides to a marked degree with School Grading, but although the efficiency of Associations, or the presentative activity of associations, corresponds to a division of individuals into classes, it does not correspond with the grading of individuals within the class.

TABLE X.

Test.	Group.	Class 4.		Class 5.		Difference.	
		Mean.	P.E.	Mean.	P.E.	Mean.	P.E.
R.M.	11 yr.	30·8	·66	28·1	1·04	2·7	1·23
	12 yr.	29·9	·88	33·3	1·97	−3·4	2·16
R.	11 yr.	35·3	·74	28·0	1·31	7·3	1·51
	12 yr.	33·8	1·03	32·7	1·14	1·1	1·53
S.	11 yr.	178	4·3	150	5·7	28	7·1
	12 yr.	177	3·8	165	3·6	12	5·2
B.A.	11 yr.	16·5	·65	10·4	·52	6·1	·83
	12 yr.	17·6	·54	10·5	·32	7·1	·63
F.A.	11 yr.	23·4	·68	15·9	·90	7·5	1·20
	12 yr.	21·5	·98	14·6	1·48	6·9	1·78
O.	11 yr.	28·0	·70	18·6	·57	9·4	·90
	12 yr.	26·6	·80	22·1	·87	4·5	1·18

SUMMARY OF EXPERIMENTAL RESULTS.

1. The results from the tests tend to show that ability is specific to particular groups of tests. Correlations **within** the groups are much higher than correlations **between** the groups.

2. Of the school subjects—Arithmetic, Composition, Spelling, Reading, and Writing—Arithmetic stands apart by itself and gives low correlations with all the others.

3. The apprehension of *form* has little to do with either Reading or Spelling.

4. The Schema test correlates more closely with Arithmetic than with any other subject.

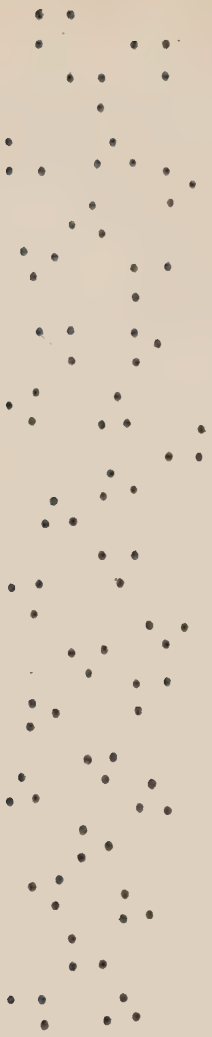
5. The division of the individuals into two classes coincides with very marked differences in the mean ability at the Association tests.

6. The Opposites test gives by far the highest correlation coefficients with the school subjects here considered.

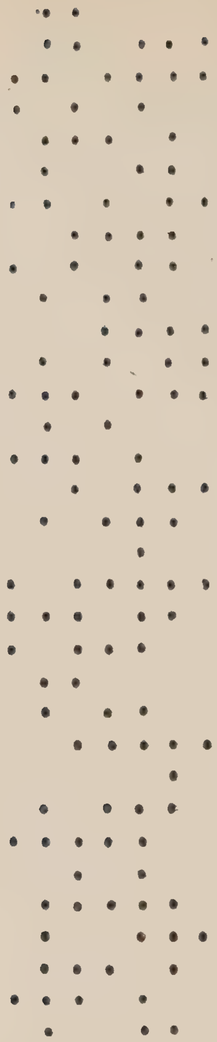
APPENDIX.

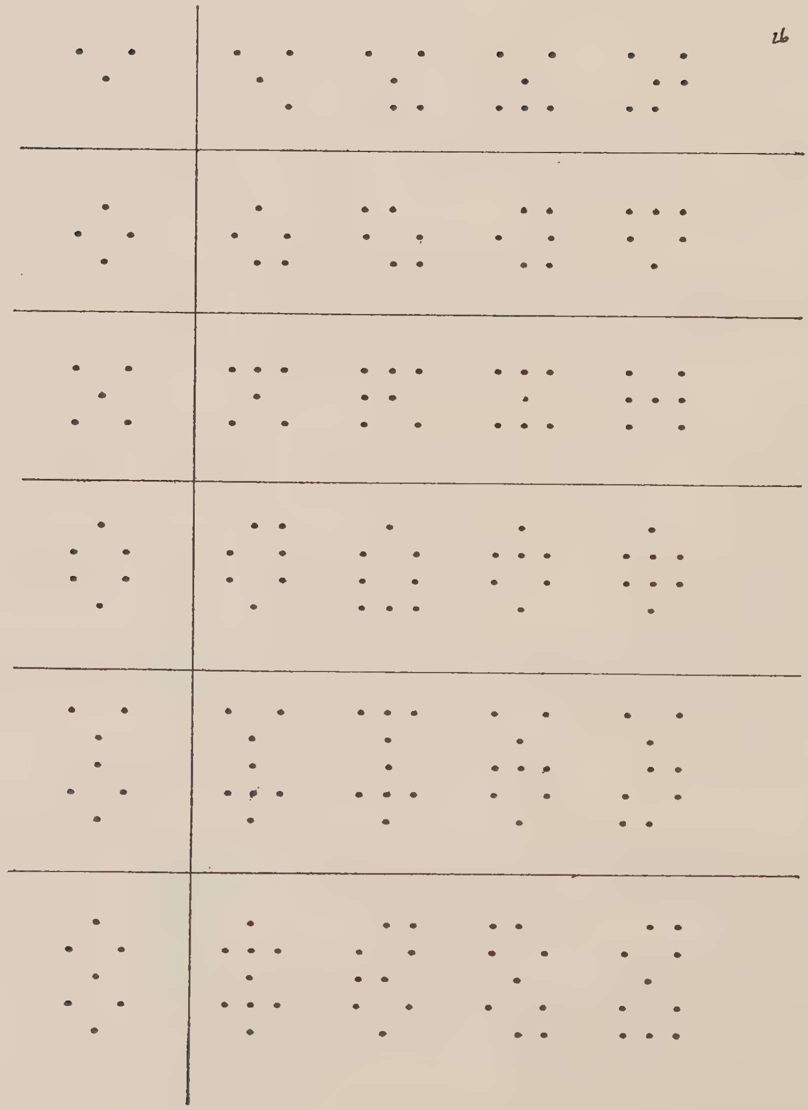
The material for the R.M. test is to be found as the A column on the first specimen paper. Column B is the array of dots used for the R. test. The second specimen paper is that used for the Schema test. For this test three other supplementary difficult patterns were also used as a continuation of the test paper.

A



B





TEXT-BOOKS OF HISTORY AND LITERATURE.

BY G. F. BRIDGE.

SIR WALTER SCOTT'S "Tales of a Grandfather" relates the history of Scotland from the Norman Conquest to Flodden in about 93,000 words; Dr. Morris's "Great Britain and Ireland" covers the same period in the history of the whole United Kingdom in some 54,000 words. But this comparison possibly will not seem to have much meaning. Let us take a more definite point. Scott's account of Bannockburn (the battle itself, not what happened just before or just after) contains about 550 words, Dr. Morris's about 220, or considerably less than half so many. And a further examination of Scott's work seems to show that about 500 words is the smallest compass in which the battle could be described in such a way as to leave a clear and vivid impression upon the mind. Scott's account does leave such an impression, Dr. Morris's does not. It is too brief, too compressed; it is lacking in detail and in all those innumerable little touches which make the difference between a live narrative and a dead narrative. Compare the two following passages:

"The archers got in a flanking 'fire,' but were suddenly cut to pieces by a small body of light Scottish horse hidden till then in the park." (Morris.)

"Bruce had in readiness a body of men-at-arms well mounted, who rode at full gallop among the archers, and as they had no weapons save their bows and arrows, which they could not use when they were attacked hand to hand, they were cut down in great numbers by the Scottish horsemen, and thrown into total confusion." (Scott.)

The one is a bald statement, the other is a picture. An intelligent boy could not read the second without seeing with his imagination those helpless archers going down before the Scotch horse; he might read the first half a dozen times without any clear impression being left on his mind.

Now Dr. Morris's work is incontestably one of the best books of its kind published in recent years. It is fresh, original, clear, full of interesting points not usually found in text-books. It is the work of a man who knows and loves his subject, and who writes with the aim of making history interesting and intelligible to boys and girls. Yet one cannot help feeling that it is a failure, because the author has undertaken an impossible task. It is a failure in this sense, that one feels that a boy could read it from beginning to end without gaining from it clear and vivid ideas about the great events of English History. The fault is not in Dr. Morris, but in the whole method of the modern historical text-book. That method ignores the fundamental psychological fact that if either interest is to be excited or comprehension gained of any event or any subject, that event or subject must be before the mind for a certain space of time. The account of it must have detail and colour, and what I have called "those innumerable little touches which make the difference between a live narrative and a dead narrative." Enough must be said about any person who is introduced to make him a real human being, enough about any one fact to make it stand out in vivid relief. If anyone is not clear what is meant by this, let him contrast some of the narratives in the Bible, say the story of Naaman or the story of Sennacherib's attack on Jerusalem, with the summary of them in a text-book of Jewish history. That surely will teach him the difference between the living and the dead, if nothing else will.

Let us observe how the text-book method works out when applied to social phenomena. The following extract is from Ransome's *Short History of England*:—

"At this time all England was divided into manors. The lord of the manor owned half the soil, a portion was in the hands of freemen, and the remainder was held by villeins. The villeins paid the lord for their houses and land by doing him certain fixed services and paying him certain dues; these however could not be altered, and so long as they were paid the villein could not be turned out. The lord cultivated his own land through his own bailiff, who supplemented the customary services by hiring the poorer villeins as labourers. Each manor had its mill and its dovecot. The villeins were all obliged to get their corn ground at the lord's mill; and they were not allowed to keep pigeons, but every villein had his pig and his poultry, and very often cattle, which were pastured on the common lands of the manor."

To discover what happens in the mind of the boy who reads this passage would be an interesting task for psychologists. The words "at this time" would suggest to him, we suppose, that the manorial system existed in the reign of Richard II, neither before nor after. The term "freemen" would suggest its natural opposite "slaves"; villeins, he would conclude, were slaves. Of "fixed services" he could make nothing, as their nature is not stated; they might very well consist in blacking the lord's boots or taking his baby out in the perambulator. The mill and the dovecot would fairly bewilder him; he would wonder why the lord should monopolize the grinding of corn, and the "pigeons" he would at this moment probably conjecture to refer to carrier-pigeons kept by traitorous villeins to inform the neighbouring baron of the lord's military movements. Behind all this, however, lies a more serious mischief. This account of the manorial system is inserted merely as an introduction to the narrative of Wat Tyler's rebellion. The history of the Kentish blacksmith being dramatic and fairly intelligible, the boy will read it with avidity and he will not trouble his head at all about manors and villeins. Three months later probably all that he will remember of these pages will be how the Lord Mayor of London struck down Wat, and Richard said "I will be your King." Just so with that dear old friend of our childhood, Thomas à Becket. How often has the writer of these lines seen a class of elementary school children patiently listening to a training college student's description of the constitutional position of the mediaeval clergy! On every countenance is plainly written "What have we got to do with all this?"; but as the dramatic moment in the story approaches, there is a sudden change—eyes brighten, faces look up, and if the teacher is not very much on the alert, he will be overwhelmed just at the right moment by a universal chorus of "Who will rid me of this turbulent priest?" The boys have had that lesson a dozen times before, and the "turbulent priest" is the only thing which has made the least impression on their minds.

Now, either the social condition of England in the fourteenth century is a suitable subject of historical study for boys and girls, or it is not. If it is not, then let us leave it alone altogether, and with it we may drop out Wat Tyler's rebellion, for there is no particular object in reading about a revolt, the aims and results of which you cannot understand. The mere events of a social or political rising are not in themselves of supreme importance, even when they include the murder of a blacksmith by a Mayor of London. History is not the mere concatenation of events, a fact which our writers of text-books have still to learn. If, on the other hand, it is desirable that boys and girls should understand the manor system, then we must take the matter in hand in real earnest. We must do to our pupils as we should certainly demand that our teachers should do to us. No adult would ever be content with the vague generalities of Ransome. He would seek in Thorold Rogers for illustrative detail. He would find out what the services and the dues exactly were. He would discover why villeins might keep pigs but not pigeons. He would attempt to form a coherent picture of the life of a mediaeval village community and to think how the system worked out in practice, and whether the villein was better or worse off than the contemporary agricultural labourer. In a word we come back to our former proposition, that history is dead without detail, and that if any particular patch of history cannot be treated in sufficient detail to make it live, it had better be passed by altogether. Fragments of knowledge are worthless; they have no abiding place in the mind; they are merely lumber. All the scraps of information about Stephen, and Robert of Normandy, and Becket, and Hotspur, and scores of other things, may well be thrown into the dust-bin, that time may be gained in the class-room and space in the text-book for the mind to linger over the life of the monastery or the village, the struggle of Scotland for freedom, or the early history of Parliament.

The writer of a text-book of history proceeds upon a fundamentally vicious principle. His method is to select the facts which he considers children ought to know, and then to pack them into the smallest possible space. The art of teaching history therefore becomes the art of packing facts into the child's mind. It is not exactly cramming, for cramming implies that the knowledge is deliberately instilled for a purely temporary purpose, and the motives of the makers of the best text-books are no doubt above suspicion of that kind, but it is packing. Every sentence in the text-book must be remembered if any clear idea of its contents is to be retained. This is the essential fault. For nobody who reads a book can hope to remember every sentence, and any book which makes a demand of that kind upon the reader is hopelessly indigestible. The teacher knows this from his own experience perfectly well, but he insists on inflicting on his pupils a method of study which he would reject for himself. He may find the Cambridge History or the Encyclopædia Britannica extremely useful, as an atlas is useful, that is, as a work of reference and a guide through unknown country, but he is not content with them if he feels a genuine curiosity about some area of history or phase of life—the Reformation, the French Revolution, Napoleon, whatever it may be. He knows that he will not get from them much more than dead bones, and that if he wants flesh and blood he must go to works of a very different character, books of which the general effect on the mind will remain even when the separate details have faded away. No one who reads a historical work retains in his mind more than a small percentage of the individual facts stated. What really remains in his consciousness is a number of solid impressions, a kind of precipitate of ideas formed by the action of the book on his mind. No doubt where books are read for definite purposes of study, something more than this may be required, for we must never forget the disciplinary element in education, and it is right that children should be taught to make an effort to remember, but in no case can the reader be required to remember all he reads. In no case can the mind be packed like a portmanteau, every available cubic inch occupied by some useful article.

If we are puzzled to know how boys and girls are intended to learn political and social history from the ordinary text-books, we are fairly bewildered by the contents of the histories of literature. Here the system of pouring into the pupil's mind an avalanche of ideas which are unconnected with anything he has ever known or experienced reaches its climax. Here the laws by which we arrive at comprehension of new ideas by passing from the concrete to the abstract, from the individual to the general, are most flagrantly set at nought. Will anyone say what a boy or girl is expected to learn from such a paragraph as this?

"French literature and style came into fashion. During his exile Charles the Second had spent much of his time in France, and he and his courtiers brought a great many French fashions with them into England. The French language was at that time just becoming settled. A number of ladies and gentlemen had formed a society called the Academy, in which they proposed to study elegance of language, making rules of style, and settling what words should be considered pure French. They made a dictionary and grammar, and the people began to write plays and poems according to rules borrowed from Greek poets and play-writers" (Stronach's *Simple History of English Literature*).

There is something quite pathetic in the attempt made in these lines to express incomprehensible ideas in such simple language that they will become comprehensible. The author has fallen into an error which is very common with students in training, but which one would have thought an experienced teacher would have avoided, the error, namely, that you can make any idea comprehensible to children if you express it in sufficiently simple language. This mistake will not be made by anyone who remembers the first fourteen verses of the Fourth Gospel. Observe how in the paragraph ideas which need for their understanding a whole background of reading come crowding one upon another. "Style," "rules of style," "plays written according to rule," "elegance of language," "a language becoming settled," what can the children of thirteen and fourteen, for whom apparently this book is intended, make of such things? You cannot find out what "a play written according to rule" is like except by reading several. You cannot comprehend the process of "a language becoming settled" except by at least dipping into the history of language, and reading books written before and after the settlement. What would a fourth form boy make of "elegance of language"? Taste does not develop till quite late in the age of adolescence.

In Stronach's book there is at least some attempt to write down to the level of the boy and girl. In Miss Lee's *School History of English Literature*, which is stated in the preface to be "A text-book for the middle forms of schools," there is not even that. This work, able and scholarly as it is, abounds with phraseology of the most incomprehensible kind. We select a few specimens at random from the third volume (Pope to Burns): "Although this book is concerned solely with literary developments," "The *Dunciad*, Pope's great satire on Dullness," "In the *Essay on Man* Pope attempted philosophical poetry," "The *Essay on Man* is wanting in knowledge of philosophy, true logical reasoning, and valuable information," "Defoe's great originality lay in the mastery of realism," "Sterne well knew that in life the humorous and the pathetic run into one another." "Sterne's humour possesses an imperishable quality which will ever give his works a very high place in our literature." The book is full of language of this kind. Still worse is that the philosophies of Berkeley and Hume are analysed—for the benefit of children of fourteen.

The unpardonable sin in a text-book of this kind is that it creates a semblance and pretence of knowledge. It makes children think they know something, when in reality they know nothing. It leads them to mistake an acquaintance with words for a knowledge of things. The boy or girl will reproduce on paper the sentence that "the *Dunciad* is a satire on dullness," and thinks that he has said something, when in reality he has said nothing, because the words correspond to no idea in his mind. Still worse is it that he mistakes for knowledge the mere passive acceptance of the author's opinions. To an educated adult the sentence about the imperishable quality of Sterne's humour may be useful and instructive. He takes it as Miss Lee's opinion, and as it is evident from Miss Lee's book that she possesses an extensive knowledge of literature, and is a person with literary taste and judgment, he concludes that she is very likely right, and that Sterne is an author he might well peruse. But all the time he is perfectly clear that he has no knowledge of Sterne's humour, and can obtain none except by reading him. Unhappily the boy is not in the same position. He does not understand the difference between first-hand and second-hand knowledge, or between opinion and fact. He is at the mercy of his author, and believes that he has learnt something about Sterne when he can say that in his works the humorous and pathetic run into one another, and that his humour possesses an imperishable quality.

All this kind of teaching about books and authors is like the teaching of botany without flowers or the teaching of chemistry without substances. There is only one way to learn anything about books, and that is by reading them. Extracts are but a sorry substitute, and always remind one of the ancient story of the pedant who, when he wished to sell his house, carried about a brick as a specimen. Twenty lines from *Paradise Lost* or from the *Speeches on America* bear about the same relation to Milton and Burke as a single stone does to a cathedral. The teaching of the history of literature, except possibly in the senior classes of some of the highest schools, is mischievous and futile. Mischievous because, as has been said, it gives the appearance instead of the reality of knowledge. Fifty or a hundred books must be carefully read—indeed, more than read, they must be studied—before any grasp of the development of literary form, or of change in the methods and objects of writers, is possible. Futile, because it helps so little to any real understanding of books. The political wisdom of Burke is not made clearer by a contrast of his style with that of Addison, nor is greater enjoyment and elevation of spirit won from Milton when we know how much he owes to classical or Italian poets. Such matters are extremely interesting, but they are for the professed literary student, not for the ordinary reader. What the average pupil really wants for a comprehension of Burke is a copious knowledge of English history and the French Revolution, and some acquaintance with the India and America of the eighteenth century; what he really needs for the appreciation of Milton is an understanding of his theology and cosmogony, and some study of his language. The history of literature merely seizes for academic pedantries time which might be devoted to the study of realities.

There is a most unfortunate gulf now existing, and, it is to be feared, deepening and widening between literature and history, or more broadly between literature and instruction. Mr. G. M. Trevelyan has recently dealt brilliantly with the subject; the present writer can only add a few words on the subject as it affects schools. What then is practically happening is this; teachers are being encouraged to look upon literature as something designed purely for æsthetic and emotional enjoyment; information must be sought, not in literary works, but in certain very unliterary works written for the purpose and called text-books. A great deal is being done to stimulate reading by boys and girls, but it is almost entirely the reading of imaginative literature, poetry, drama, and fiction. Of reading real books for information there is extremely little in secondary schools, and practically nothing at all in elementary schools, for the crude and bald historical and geographical "readers" put into the hands of primary school children are anything but *books*. Indeed it is probable that the great majority of boys and girls leave even the secondary schools without ever having read a book which combines instruction with enjoyment, the real test of a *book* as distinguished from a *text-book*. A curious proof of the attitude of teachers of English to works of information occurs in the English Association's *List of Authors and Works* for study in schools. We find the headings "Historical Prose," "Biographical Prose." The inference is that it is intended that these books should be read, not as history and biography, but as so much prose. The object of reading them would appear to be that the pupil should become acquainted with fine language and style, not that he should acquire information. The test presumably of a teacher's success in dealing with, say, Southey's *Life of Nelson* would be, not whether his class understood Nelson's qualities as a fighting seaman and the main features of the campaign of Trafalgar, but whether they could criticize Southey's *technique* and describe properly his "place" in literature. But biographies should surely be read for the purpose for which they are written, namely, in order to become familiarly acquainted with their subject. All else is secondary, and the proper person to read them with a class is not the teacher of English, but the teacher of history; or rather it is not a specialist teacher at all, but the well-informed man or woman, who never thinks whether they should be treated as literature or history, but who is simply interested in their contents, and in everything relating to them.

What is to be the remedy for text-books of history, for their inhumanity, their deadness, their coldness, their incapacity to touch the springs of feeling and intelligence? How are we to avoid these dreary deserts of bald facts, in which the reader never hears enough about a man to learn to love him, or enough about any topic to comprehend it, in studying which he is dragged incessantly backwards and forwards between subjects of wholly diverse kinds: a war in one paragraph, a social movement in the next, a change in the constitution in the third?

John Stuart Mill said that no one ever learnt history and geography except by reading books, and he was surely right to this extent, that however important is the place of oral teaching, especially in the teaching of young children, the reading of books is an indispensable element in the acquirement of historical and geographical knowledge. And if education is, amongst other things, teaching boys and girls how to learn, they must certainly acquire the art of reading books for themselves, for books are, after all, the chief means of information about humanity. But if books are to be read by our pupils, readable books must be placed in their hands, that is, books which are works of literary art written for pleasure as well as instruction.

No question in education admits of more than an approximate solution, and compromise is of the essence of the schoolmaster's craft, as it is of the statesman's. The reconciliation of the arts of the historian and the literary artist is, it may be granted, not easy. When one names the book of Joshua, Herodotus, Froissart, and some parts of the Chroniclers, as books which young people might really read, the reply is at once forthcoming that they are not history. But this is really only a half-truth. Certainly the book of Joshua—to take the most familiar—is not a narrative of historical fact in the sense that the *Times History of the South African War* is, and we ought not to let our pupils believe that it is. On the other hand, the impression left on the mind by the reading of such a book will be to a great extent in correspondence with the truth. The picture of the Jewish temper, methods of warfare, and dealings with the Canaanites, is probably, broadly speaking, truthful, though the completeness of this conquest is no doubt exaggerated. A carefully-written text-book would be much more accurate in detail, but as likely as not it would leave no impression upon the mind at all. We are not, however, confined to semi-legendary history. There are plenty of modern books which are really literature, though they may be far from the first rank in literature, and at the same time of historical value. One of the curious features of the use of books in schools nowadays is that there is nothing between first-rate literature and wholly unliterary text-books, between Froude and Mr. Jones's *History of England for Schools*. It would seem as if our teachers of English care nothing about their pupils acquiring sound information as long as they themselves read good English, and our teachers of History care nothing about their reading good English as long as they acquire correct information. But there are plenty of books which combine the two objects. Anson's *Voyage round the World* gives a better and probably a truer picture of life in the old navy than any text-book ever written. Creasy's *Fifteen Decisive Battles of the World* is a work in literary form from which no one could fail to gain a good general idea of the history of Europe. Scott's *Tales of a Grandfather*, classed by the English Association as Imaginative Prose, presumably because modern research has discovered some inaccuracy in it, gives a picture of Scottish life that is probably generally true. There is no need to mention Motley and Prescott, and we may include at least the fairest of Macaulay's Essays. There are also such books as the *English Men of Action* series, and other short biographies. For young men and women of seventeen and eighteen it is unnecessary to particularize; all the riches of English historical literature are at their disposal. From such books, read under the guidance of the teacher, and checked by his criticism, young people will gain more idea of history than from all the absolutely exact, impartial, accurate, and complete school histories of England ever written.

But we must not rely entirely on the past. We must have our writers for the present, and they must be literary artists. Further, we must have books which deal systematically with all English history, or at least a large part of it. It is likely enough that some of our text-book writers could be literary artists if the conditions of their work allowed it. But no literary art can survive the demand that the maximum number of facts shall be compressed into the minimum number of pages, just as no genuine education can consist with the requirement that the maximum number of facts shall be learnt in the minimum number of hours. Success can be achieved on one condition only, and that is the recognition of the fact that the amount of history to be learnt must be ruthlessly cut down. Not one-half of what is now served up in tabloid form to boys and girls can be really learnt, and text-books which try to teach it all end by teaching nothing. We must learn to omit and to select. A writer, for instance, who dismissed all else in the reign of James I in a few lines which would merely bridge the gulf between Elizabeth and Charles, and devoted several pages to the Pilgrim Fathers and the Colonization of Ulster, might really tell a reader enough about those events to make him realize their nature and understand their significance and their results. A teacher who ignored Carr and Buckingham might have space enough so to deal with Strafford and Cromwell that they would be living persons to his pupils, whom they could love or hate. Surely complete ignorance of Carr and Buckingham would be a cheap price to pay for a living knowledge of Strafford and Cromwell. Specialists will no doubt say that this is an unscientific method of teaching history, and so it may be; but the need of the history text-book of to-day is, not that it should be made scientific, but that it should be made human and possible of digestion by the ordinary human mind. In the hope that such books may yet be written by this generation of teachers, the present writer closes these remarks.

THE VALUE OF THE COMBINATION METHOD FOR EXAMINATION PURPOSES.

By WILLIAM BOYD, M.A., B.Sc., D.Phil., Lecturer in Education, Glasgow University.

EXAMINATIONS play such a large and important part in scholastic life that an expedient like "The Ebbinghaus Method of Conjectural Examination,"[1] which promises greater sureness of results and a reduction in the labour of correction, deserves the most serious consideration. With a view to investigating the possibilities of the method, I gave one of my classes two examinations on the class work of the first term at the same hour on successive days. In the one examination, which was of the ordinary type, I set three questions: the first on prescribed reading, which had been discussed tutorially; the second on lecture work, involving considerable detail; the third also on lecture work, but requiring an understanding of principles rather than a knowledge of particular facts. In the other, I gave three passages similar in general character to the questions of the first examination, with significant words omitted after the manner of the Ebbinghaus Combination Method, the passages consisting of extracts from the bookwork and from my lectures, modified by curtailment and paraphrase. Thus, in the third question of the ordinary examination, the students were asked to discuss the difference in the permanent effects of the teacher's work according as acquired characters are or are not inherited. Corresponding to this in the Combination Method test was the following passage (in which the omitted words are shown in italics):—

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[1] Propounded by Mr. A. P. Weiss in this *Journal*, June, 1912.

> "Though the human soul has developed out of the animal soul, purely *animal* impulses have no place in the lives of men. Man is *rational* in the sense that he always thinks more or less about what he is doing. The *fundamental* impulses of his nature can only affect his action by taking the form of *motives* and being conceived in relation to the main *purposes* of his life. But it would be a mistake to suppose that this implies that every human action is the result of an intellectual process by which a man thinks of something as *desirable* and then plans *means* for its attainment. As a matter of fact, most of the actions of daily life are not performed on this *level* of mind, and even the serious concerns of life in which deliberate reasoning has its greatest scope depend largely on *instinctive* promptings. This applies to children even more than to adults. The *intellectualist* fallacy leads astray in all the social sciences, and not least in those which have the child as their subject. To interpret a child's actions as if they were all the outcome of *deliberate* thought inevitably causes misunderstanding and leads to wrong methods of *discipline*. The unfortunate boy, says *Graham Wallas*, speaking of the boys of fifty years ago, who acted on an ancient impulse to *fidget* or play truant were asked why they had done so. Being ignorant of their own *evolutionary* history, they were forced to invent some far-fetched lie, and were punished for that as well. The modern teacher's power of *controlling* such impulses is due to his recognition of their *sub-rational* origin."

The maximum mark for each question or passage was fixed at 17, and the total reckoned as 50. The ordinary examination was marked in the usual way, but with more than usual deliberateness and severity. In the Combination Method test each word which satisfied the double requirement of making sense in the sentence in which it occurred and agreeing with the whole context was awarded a mark of 1; a more or less satisfactory word got a mark of ½, an omission or a vague inoffensive word 0, a word obviously wrong −1. To avoid half marks and to give the results in percentage form, both sets of total marks were doubled before being dealt with.

With a view to taking separate account of differences due to age and sex, I divided the papers of the class into four groups: (1) Men graduates (M.G.), 45 in number; (2) Women graduates (W.G.), 44 in number; (3) Third year undergraduate men (M.III), 20 in number; (4) Third year undergraduate women (W.III), 10 in number. As there were too few women undergraduates to make the results in their case of any great value, I began the marking of the papers with them; and since one is generally feeling one's way to a standard of marking in the first papers corrected, the marks of this group are probably rather high in spite of subsequent checking, and are in any case less reliable than the rest.

One of the first things to find out was how the two sets of results compared, and in particular what differences there were in the order of merit of a class or group as determined by them. In order to ascertain this, I calculated the coefficients of correlation of the four groups by the product moment formula, with the following result: M.G., ·53 (P.E., ·072); W.G., ·39 (P.E., ·085); M.III, ·64 (P.E., ·088); W.III, ·69 (P.E., ·085). This shows that except in one case the degree of correlation is very considerable. It is doubtful indeed whether two markings of the same papers by different examiners or the results of two examinations of the usual type on the same or similar work would show much higher correlation.[1]

An even more valuable comparison was one made between the two lists arranged in rank with the students' estimate of their own order. This unfortunately was only possible in the case of the Third Year groups. The graduates were a heterogeneous crowd whose courses had been along very different lines; the Third Year people, on the other hand, had been at work together for more than two years, and knew each other's capacities quite well. To get the men's estimate, I asked them to write down the names of the half-dozen of their number whom they would expect to find about the top in an Education examination; then I got the four students who were adjudged by vote to be best in their class to rank all the members of their group. Correlating the two examination lists with this one I found the coefficients to be ·78 for the ordinary examination and ·73 for the Combination Method test; the coefficient for the combined lists was ·84. Though the number of the women makes the figures in their case of comparatively little value, it is worth adding that the corresponding coefficients for them were ·74, ·76, and ·76.

So far as these comparisons go, the Combination Method test comes out well. The order of merit based on the results got from it is sufficiently near the order of merit determined by the ordinary examination to entitle us to consider it seriously as a possible alternative, and when judged by the degree of approximation to an independent estimate, it is for all practical purposes as good. The next question to be considered is whether the difference between the two orders is only such as might be got from any two examinations or is due to inherent differences in the character of the tests. We shall seek an answer to that question in the first instance by considering the general results.

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[1] Mr. Hugh MacCallum, the Master of Method for students in training attending the University, very kindly corrected the papers of the Third Year men for purposes of comparison. The coefficient of correlation for his marks and mine was ·66. The examinations at the end of the second term for the class under discussion in the present article were two of a like character, one on the lectures, the other on a prescribed book. The coefficients for the four groups were as follows: M.G., ·47; W.G., ·57; M.III, ·66; W.III, ·72.

Group	Ordinary Examination			Combination Method		
	Average	St. Dev.	Coeff. of Variation	Average	St. Dev.	Coeff. of Variation
M.G.	58·4	8·2	14·1	74·0	10·1	13·6
W.G.	56·6	9·3	16·4	76·1	9·9	13·0
M.III	54·1	10·0	18·5	73·6	10·4	14·1
W.III	55·2	12·0	21·8	76·1	9·3	12·2

These figures are somewhat surprising. *Prima facie* one would have expected that the graduates, fully a third of whom in the present case were people with honours degrees, would have shown a distinct superiority over the undergraduates.[1] In the ordinary examination, it is true, the averages of the graduates are higher than those of the undergraduates, but not by much; and even that cannot be said with respect to the Combination Method test. Here the differences in the averages, which again are small, contradict expectation. The women graduates and the women undergraduates, with the same average mark, overtop both sets of men. The doubt, however, arises whether from differences so small any conclusions can safely be drawn. But it must be noted that the averages are not our only ground of comparison. The various coefficients of variation $\left(\frac{\sigma}{\text{av.}} \times 100\right)$, which so far as my experience goes are more reliable indices of the differences between groups at various levels of attainment than averages, point in much the same direction as the averages. In the ordinary examination they bring out quite decisively the superiority of the graduates over the undergraduates and of the two groups of men over the corresponding groups of women. In the case of the Combination Method test, there is further evidence, in spite of an irregularity in the small W.III group, of the superiority of the women as a whole already suggested by the averages.

Taking both averages and coefficients of variation into consideration, then, we get a clear indication of a difference in the character of the two examinations. The ordinary examination shows the graduates doing better than the undergraduates, and the men doing better than the women. The Combination Method, on the other hand, shows the undergraduate women doing rather better than the graduate women, and the women as a whole doing better than the men as a whole. It is quite evident from this contradiction that whether the Combination Method test is a better or a worse means of judging and appraising students' knowledge of a subject, it cannot be regarded simply as a substitute for the ordinary examination. A method of examination which minimizes the effects of greater age and culture, and withdraws the balance of advantage from one sex to the other, must call into play to a greater or less extent other powers of mind than those required for the usual kind of examination. The explanation of the facts offered by the men students was that the ordinary examination gave greater scope for originality, and therefore brought their noble selves out on top. The women students argued that since there is a greater variety of openings into professional life for men than for women, the level of ability among the women in training as teachers is higher than that of their male compeers, and that consequently it was a genuine superiority that was revealed by the Combination Method test.

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[1] It is perhaps worth mentioning here that some of the best of the graduates enter on their training as teachers immediately after a strenuous summer spent in preparation for their honours examinations, and consequently do not work as well as the undergraduates. In this connexion it may be noted that the marks of two or three distinguished students were equally poor in both examinations, showing that the good general ability did not make up for imperfect preparation in the Combination Method test any more than in the other.

First let us examine the women's view. If it is sound, then the fact that the Combination Method gives one sex an advantage over the other would not be an objection to it but rather a point in its favour. It must be admitted that the general conditions under which the two sexes enter training for the teaching profession creates a presumption that the women as a group will be the mental superiors of the men. Yet I doubt whether anyone acquainted with the work done by students like those in my class would agree that the women were, as a matter of fact, better than the men. In any case, the fact that it is not only the graduate women but the undergraduate women as well who have a higher average than either of the groups of men weakens the women's argument; because no one who knew both groups could possibly believe that the undergraduate women were in any conceivable sense superior to the graduate men. The examination test which gives them a higher average mark certainly misrepresents their relative worth. On the whole, then, I am inclined to think that the Combination Method test is open to the objection of confusing class gradations. But it would be necessary to see the two kinds of tests applied to other mixed classes, and especially with younger pupils, before passing final judgment.

The question whether the Combination Method test discriminates unfairly against one sex or the other is really part of the much larger and more important question whether it discriminates against particular types of mind or particular types of training. The opinion of a very considerable number of the students, on subsequent discussion, was that it favoured unduly those who had good verbal memories and, even more, those who had good visual memories. Fully a third of them maintained that for success in it it was more important to remember words than to understand arguments; and nearly half of those who recognized the need of understanding the arguments thought it required considerable attention to the language in which they were expressed. One of those who objected to its excessively verbal character illustrated his point thus: "There was one passage which I did not understand, but which I remembered owing to the fact that I was not sure of the meaning. Consequently I was able to fill in the blanks without having a clear idea of the meaning." An interesting development of this view was the contention that since the method of filling in the blanks was very like the method commonly adopted in doing unseens in the language classes, those students who had specialized in languages would do better in the Combination Method test than the others.

To discover whether there is any truth in the view that students with a good verbal memory come our better in the Combination Method test, I gave the two graduate groups the following passage, taken with some modifications from the Binet-Simon test for adults, as a test of verbal memory.

> "Very different judgments have been passed on the value of life. Some regard it as good: others consider it bad. It would be more true to say that it is mediocre. On the one hand, it never gives us as much happiness as we have anticipated; and on the other hand, the misfortunes it inflicts on us are always less than other people would have anticipated for us. It is this mediocrity of life which makes it equitable—or, to be more accurate, which prevents it being fundamentally unjust."

They learned the passage for five minutes at the beginning of a class hour, and after half an hour's discussion of other topics attempted to reproduce it with verbal accuracy. In assessing the papers, each phrase was given a certain number of marks and deductions made for paraphrases or omissions, and the students ranked according to the smallness of their score. Correlation of the results of this test with those in the ordinary examination by means of the Rank formula gave coefficients of ·41 for the men and ·16 for the women; correlation with those in the Combination Method test gave coefficients of ·37 and ·13 respectively. So far as these figures go the evidence is plainly against the view that a good verbal memory is of more help in the Combination Method test than in the other. The advantage, such as there is, is rather in the ordinary examination.

The next question is whether, as quite a number of the students maintained, good visualizers are likely to do better than others in the Combination Method test. To determine this, I proceeded to find out those with decided powers of visualizing. I put before the various groups for one minute a square of nine letters, and asked them to memorize them in any way they pleased. After they had written from memory the diagonal letters from the right hand top corner to the left hand bottom corner, I got them to indicate how they had remembered them. In addition to this, I asked those who had been conscious of visualizing in the examinations to note down the fact. By these means I got a list of 11 men and 16 women who were undoubted visualizers. Then I reduced the marks of all the men in the Combination Method test so that the average would be the same as that in the ordinary examination; and similarly with the marks of all the women. As the following table shows, the reduced average mark in the Combination Method test of the 11 men who visualized well fell ·5 below their average mark in the ordinary examination, and the reduced average mark of the 16 women fell 3·2 below their average mark.

	Average of all.	Ord. Exam. Average of Visualizers.	Reduced Comb. Method average of Visualizers.
Men ...	57·8	55·0	54·5
Women ...	56·5	57·0	53·8

These figures seem to indicate quite plainly that the power to visualize well is generally a hindrance rather than a help in the Combination Method test. This conclusion was substantiated in another way. Two lists were prepared, one showing all whose marks after reduction were at least 10% higher in the Combination Method test, the other showing all whose marks were at least 10% lower. Altogether 18 had done markedly better in it, and of these only two, both men, were good visualizers. Against this there were 16 who had done markedly worse, of whom six, three men and three women, were good visualizers.

In dealing with the question whether those with a special aptitude for languages have an advantage over other students, a similar line of investigation was followed. A list was made of all the members of the class who had distinguished themselves in any way in language or in science during their University course. Excluding those who had achieved distinction in both lines of study, the numbers were:—*Language:* Men 11, Women 19. *Science:* Men 24, Women 10. The following table shows the marks of the different groups in the two examinations:—

	Average of all.	Ord. Exam. Average of Language Groups.	Reduced Comb. Method Avge. of Language Groups.	Ord. Exam. Average of Science Groups.	Reduced Comb. Method Avge. of Science Groups.
Men ...	57·8	58·9	59·9	59·4	61·6
Women	56·5	57·5	55·6	58·1	55·0
Men and Women	57·3	58·2	57·8	58·8	58·3

These figures, it must be confessed, are very difficult to interpret. It is easy to understand why the average mark in the ordinary examination should be higher in all cases than the class averages, seeing that the groups under consideration were composed of outstanding students. But why should both sets of men do better in the Combination Method test and both sets of women do worse, when the result over the whole class was the reverse? Remembering that the undergraduate women did as well as the graduate women in the Combination Method test, one is tempted to think that that test, while favouring women more than men, tends to favour the less distinguished rather than the more distinguished women. However that be, it does not seem possible to draw any very definite conclusion from the figures with respect to the relative advantages of the linguistic and the scientific trainings. The most that can be safely said is that, contrary to the opinion of a considerable number of the students, there is no evident bias in favour of those expert in languages in performing the Combination Method test. It may be added at this point that a comparison of those students who did markedly better in the test with those who did markedly worse gives a contrary indication. Practically all who did worse were students who considered their bent to be towards languages, while about half of those who did better preferred the scientific studies.

Many other interesting points emerged in the comparison of the two types of examination. One or two of these may be noted briefly:—

Reliability.—A fundamental consideration about any form of examination is the degree of variability in the examiner's marking at various times. To determine this in the present case, I corrected the papers of the men graduates in both tests a second time two months after the first marking. The coefficient of correlation for the two sets of results was ·87 for the ordinary examination and ·96 for the Combination Method. Though both figures give a satisfactory indication of steadiness of marking, the Combination Method test is unmistakably superior in this respect. It is doubtful whether one could ever get such a close approximation of marks by the ordinary method of examination.

Indications of Preparation of Work.—Though the papers in the Combination Method test were by no means lacking in individuality, it was not possible to form any very certain judgment with regard to the students' state of preparation. It is true that none of those whom the ordinary examination showed to have been slack got good marks in the Combination Method test, but in a number of cases students who did quite good work in the first examination got poor marks in the second. Possibly if an examiner had as much experience of the Combination Method test as of the other, he might be as sure in his diagnosis of the state of preparation, but it is extremely doubtful. This is a serious drawback.

Copying.—Another drawback is the greater opportunity for copying afforded by the test. "The first thing that struck me about the Combination Method," says one student, "is the ease with which copying could be done, particularly under school conditions. Apart from a desire to copy, it is almost impossible to keep one's eyes absolutely fixed on one's own paper, and in this new system I was afraid to look up from my paper in case I should see even the length of the words employed by those next me." This was the general judgment of the class, and it was confirmed by the fact that for the first time in my University career I detected unmistakable signs of copying in the papers of two students.

Absence of Strain.—Against these undoubted defects must be set the general testimony to the absence of any sense of strain or of examination fear such as sometimes spoils the work of even good students. One student makes the comment that the Combination Method test was the first examination she had ever enjoyed! Whether the enjoyment would continue after the feeling of novelty had worn off is another question.

The general conclusion to which the whole discussion leads is that the Combination Method test can never completely take the place of the ordinary examination. But the ease with which it can be done and corrected, the advantage which it gives to certain students who usually fail to do themselves justice in examinations, the steadiness of the examiner's marking, the superiority of the results got when the marks of the two kinds of examination are combined, all go to indicate that it has a considerable value when used occasionally to supplement the ordinary examination.

REVIEWS AND NOTICES OF BOOKS.

An Introduction to Logic from the Standpoint of Education. By L. J. Russell, M.A., B.Sc. Macmillan & Co. 2/6 net. (pp. vii+137.)

THIS little volume should be cordially welcomed, for it sets itself to do something that was very much in need of being done. Its aim is to outline a course in Logic for teachers in training who can afford to devote to philosophical discipline only a comparatively short period of their time of study. Its main problem therefore is the problem of selection, and it has to be judged largely by its sense of the relative importance of different branches of logic for a sound educational training. Mr. Russell has succeeded admirably in a delicate task. His first and final object has been to state with simplicity and brevity what clear thinking is, and what conditions it demands, and there is not one discussion in the book that is not directly relevant to that object.

The method of the book is, of course, analytical. Its merit is that the analysis is so skilfully carried through that at no time does the student feel that thinking has been reduced to an unreal and arbitrary operation. Mr. Russell begins each argument by taking plain examples of ordinary thinking and reasoning, and proceeds to a progressively deepening elucidation of the principles on which such reasoning depends. Concepts, judgments, reasonings and inferences are examined in turn, and their various forms are precisely and systematically set forth. Mr. Russell rightly maintains the importance of formal expression as a test of accuracy of reasoning. "All reasoning, all inference, when completely expressed, has a formal side . . . If your reasons are good in this case, they must be good in any case which presents the same form. If not, they are not good in this case either. They are either actually wrong, or you have not completely expressed all you mean." And if Mr. Russell abandons the Aristotelian classifications of the syllogism in favour of a simpler arrangement, that arrangement demands no less exactness of expression than the old.

The later chapters in the book deal in the same manner with such topics as the Methods of Agreement and Difference, Analogy, and the Principle of Casuality.

The greater part of the book may be said to be easy enough for the student to master without much help, but some of the central chapters (notably vi to x) are so closely reasoned and compact that the assistance of a teacher would be of great value. But this is no defect in a book designed for teaching purposes. No doubt there are some minor points that may require modification (such as, possibly, the last paragraph of chapter iii and the classification on p. 21), but they are not such as to affect the main argument of the book. And, in any case, no humanely-minded person will find anything but pleasure in working with a book which frankly encourages its readers to find their logical pabulum in a cheerful heterogeneity of Tyndall and Huxley, Sherlock Holmes and "Alice in Wonderland," rather than in the arid subtleties of the Scholastics.

H. J. W. HETHERINGTON.

The Edgeworths: A Study of Later Eighteenth Century Education. By A. Paterson, M.A. (Edin.), Ph. D. (Jena). (pp. xi+120.) W. B. Clive. 1/6.

THIS is a simple and a well-proportioned account of the educational work of R. L. Edgeworth and his daughter Maria. After a brief biographical chapter and a slight treatment of those "Educational Influences" which Miss Paterson esteems the most important, come surveys of the Edgeworths' chief books. The account is descriptive rather than critical, and there is so little about anything except the writings of the Edgeworths that the promise of the sub-title cannot be regarded as fulfilled. In a rather curious passage on p. 104, Miss Paterson appears to imply that Robert Owen's "New View of Society," published 1813, was contemporary with Mr. Edgeworth's earlier life, and she seems unaware that the exaggerated view of the power of education there alluded to was a commonplace of the philosophers of the "Enlightenment," and was voiced in most explicit terms by Helvetius.

There are some writers whose works are confused, voluminous, and obscure, and to these an introduction is useful if not essential. Such emphatically is Pestalozzi. But the Edgeworths are not obscure, though they are often tedious, and their essential writings are not voluminous. The whole series of "Moral Tales" merely exemplifies the principles set forth in the other books, and so has no independent value for the student of the history of education. It may be conceded to Miss Paterson that in the case of the main writings "a process of sifting and rearrangement would be necessary in order to render [their] contents acceptable to modern readers" (pp. 28-29), but it may also be urged that the Edgeworths' own writings thus adapted would be the best presentation of the Edgeworths' thoughts. Often the remarks made—especially in the chapter on the "Moral Tales"—can mean very little to a reader who is unacquainted with the originals; and to those who are familiar with them this descriptive sketch conveys no new thoughts. This is inevitable when such a mode of treatment is applied to such writings. So, while we are glad to grant that Miss Paterson has done very well what she set out to do, we are not convinced that it was worth doing, and we are sure that it is not the best way to awaken "a further interest in educational ideas," and that it is far from fulfilling "its main purpose—that of doing justice to a neglected period of educational history" (p. 7). J. W.

A Systematic Course of English Composition. By H. Pine. (182 pp.) Ralph Holland & Co. Teachers' Edition.

WE gather from the Introduction which Dr. Hayward supplies to the book that Mr. Pine's work is largely if not entirely concerned with the children of immigrants to whom English is a foreign language. Although that does not in the least prevent this chip from his workshop being of great use to teachers under normal conditions, his special circumstances have no doubt affected his method, which one may describe broadly as synthetic. The earlier lessons are concerned with enlarging bald sentence forms, and here one may enter a protest against the want of logic which tells us on the one hand that a "sentence is a complete thought expressed in words," and presently requires us to enlarge these "complete thoughts." Much as we respect the work which this book represents, it is impossible not to entertain a fear that the relation of such exercises as "sentence expansion" to reality and necessity has been overlooked. Unless he sees what precisely is gained by descriptive detail, a boy is not likely to make progress in good writing. The cultivation of what is almost an emotional sense of fitness is absent from the body of the book, though a chapter on the use of words does come near the end.

In spite of this, there is much useful spade-work outlined in a book which has the great merit of coming straight from the classroom.

A Practical Course in Intermediate English. By E. Albert, M.A. (272 pp.) Harrap & Co. 2/-.

As suggested by the title, the method of the book is inductive and practical. In many ways the collection of exercises attached to each chapter is the best feature of the book, as the grammatical discussions in the first section are the least satisfactory. An English Grammar which really faces the facts of language has yet to be written for schools. Mr. Albert helps to perpetuate such crudities as "the subject is said to be in the nominative case because it is the chief name-word in the sentence," "the Verb is *the* word in a sentence," and his definition of a Preposition would give some excuse to a boy who called "his" a Preposition in the sentence "The master hit his wicket." We may also reasonably object to a method which begins with words and parts of speech. Much confusion arises in the minds of ordinary boys as a result of grammatical procedure which insists on assigning every word to one or other of the traditional parts of speech.

The book is written for the lower forms of secondary schools, and is meant to introduce and to supplement "A Practical Course in Secondary English" which was noticed recently in these columns.

Mentally Defective Children. By A. Binet and Th. Simon. Authorized Translation by W. B. Drummond, M.B., with an introduction by Professor A. Darroch. (xi+180 pp.) E. Arnold. 2/6 net.

A CORDIAL welcome surely awaits this volume. The problem of the sub-normal child is one of great social importance, and an uninstructed society has tended to hand it over to the medical profession for solution. This tendency brought with it a certain relief to the teachers, but the doctors were faced with difficulties for which their training had not usually prepared them. Alike in diagnosis and in treatment, the problem is neither wholly medical nor wholly pedagogic. The trained judgment of both professions is necessary, with the psychologist as adviser and intermediary. Something of this kind is what the authors stand for, and both teachers and doctors will find it useful. The well-known Binet-Simon intelligence tests are given in an appendix. It is perhaps a pity that the translator did not reproduce the English pictures to which she refers on page 165. They are excellent substitutes for the French pictures used by Binet, and it would have been convenient to have had them in a working shape.

Teacher and Teaching. By R. H. Tierney, S.J. (x+178 pp.) Longmans, Green & Co. 3/6 net.

THE book consists of a series of essays on educational questions reprinted from an American journal. Its standpoint is of course Roman Catholic, and it presents an admirable outline of the best educational theory and practice of that Church. The style is most attractive, and there is hardly an essay in the book which could not be read with interest and profit by any teacher. To quote a passage from the chapter entitled "The Ideal Teacher":—"The true master must have natural ability which has been cultivated long and assiduously. His subject-matter must be a part of his life, and he must be able to present it simply, clearly, directly, correctly. If it is hazy in his mind, it will be thick on his lips and foggy in the minds of his boys. . . . If he is inaccurate, his charges will be an abomination of desolation in this regard. If he is disorderly and inconsequent, his pupils will be the despair of all future teachers. An illogical mind is almost as incorrigible as the devil." Or again: "The schoolroom is too frequently the grave of mental power and hope and ambition." But the temptation to quote must be resisted. Those who read the book will find it stimulating and suggestive in a high degree.

Essentials of Physiology. By F. A. Bainbridge and J. Acworth Menzies. London: Longmans, Green & Co.; 1914. (pp 434.) 134 illustrations. 10/6 net.

THE general arrangement of the book differs little from others written on the same subject. The type is clear and easy to read. The illustrations are good, especially those of tracings, which are fairly numerous. The text is thoroughly up to date, and contains a great deal of information upon the subject of physiology. At the same time it is extremely concise, and written in an interesting style.

More experimental detail would have been an advantage, and actual experiments substantiating many statements would have increased the value of the book. Certain parts of the various sections have been only slightly touched upon, e.g., deglutition and movements of the stomach and intestines. Also the time taken by various foodstuffs in their passage through the alimentary canal—all highly important to the student of medicine—might have been described in more detail.

The book undoubtedly will be welcomed by medical students on account of its brevity and definite statements, and also for the absence of many conflicting theories. It will be of extreme value, and is to be recommended to the student revising for an examination. F. A. D.

Correlative Light Woodwork. By J. G. Adams and C. A. Elliott. (215 pages). G. G. Harrap & Co. 8/6 net.

TEACHERS may find many useful models in the very large stock provided in this book. There are two groups—the larger one dealing with those the worker can make by himself, and the second, giving group work. The models vary in difficulty from a plant ladder and label to a tool chest and set of bookshelves. The directions for making are quite clear and, with the drawings, can be easily followed. An attempt is made to bring light woodwork into intimate touch with school work. "Light woodwork is brought to the other subjects, and made to permeate them, whilst . . . the various subjects are brought into touch with woodwork. In this way a complete circuit is established." But it is just here that correlation again handicaps and limits good work. Why should we be compelled to "make a complete circuit"? The scheme of work with its correlated lessons, and the chapter on handwork and literature, make extraordinary circuits. It is a far cry from soap boxes to the Pilgrim Fathers, via Canada and lumbering, and from a post-card frame, in the making of which a hammer is used, to prehistoric tools, hammers in nature, and seeds! Incidentally, handwork of the right sort is bound to touch the worker's life both in school and out, and it is a pity to meet once more this ruled sheet of paper, whose squares are filled with strained association topics.

W. A. BONE.

BOOKS RECEIVED.

Introduction to Experimental Psychology in Relation to Education. By Professor C. W. Valentine. (x + 194 pp.) W. B. Clive. 2/6.

[TEACHERS who desire to know something of the movement towards exact methods in the investigation of class-room problems could not do better than begin with Professor Valentine's book. He has not aimed at producing an exhaustive account of the work already done in this field, but rather at presenting a number of typical problems, describing and illustrating possible methods of attack, and discussing the results obtained. The exposition is throughout extremely clear, and the discussions are illuminating. The book deserves a cordial welcome from all students of teaching practice.]

The Modern High School: Its Administration and Extension. Edited by C. H. Johnston, Ph.D. (xviii + 847 pp.) Scribners.

[A co-operative volume, the contributors to which include Dr. Snedden, Dr. Colin Scott, Dr. Ruediger, and many other well-known American teachers and administrators. A review of the book will appear in our next issue.]

Republican Rome. By H. L. Havell, B.A. (xxiii + 563 pp.) Harrap. 7/6 net.

[THE second volume to appear in the "Great Nations Series" announced by the Publishers. The author has done his work admirably. Both student and general reader will find the book attractive and authoritative. It is plentifully illustrated with maps and well-chosen pictures.

We hope the publishers may succeed in winning the general reader's attention to this enterprise. The volume might well find a place on the shelves of all School and Training College libraries.]

Reading Aloud and Literary Appreciation. By Hardress O'Grady. (x+160 pp.) G. Bell & Sons. 2/-.

English Composition. By R. S. Bate. (viii + 423 pp.) G. Bell & Sons. 3/6.

The Teaching of Algebra (including Trigonometry). By Professor T. Percy Nunn. (xiv + 616 pp.) Longmans, Green & Co. 6/6.

[THIS important volume was preceded by a volume of Exercises in Algebra (including Trigonometry), and is to be followed by a second volume of exercises. A review of the whole work will appear after the publication of the third volume.]

Exercises in Arithmetic and Mensuration. By P. Abbott. (ix + 524 pp.) Longmans, Green & Co. 3/6.

Projective Geometry. By G. B. Mathews, F.R.S. (vii + 349 pp.) Longmans, Green & Co. 5/-.

[Like the two volumes of Professor Nunn mentioned above, these Books form part of Longmans' Modern Mathematical Series, an enterprising attempt to bring new interest into the traditional treatment of the subject.]

NOTICES.

Degrees in Education.

Our readers will be interested to learn that the University of Manchester has established a Faculty of Education. The degree of the Faculty is to be *Master in Education* (M.Ed.) The essential conditions preliminary to entering upon work for this degree are graduation in some other faculty and the possession of a Teachers' Diploma. It is an important academic departure which every student of education will welcome.

Do you know of anyone who was adopted when a Child?

There is still a considerable diversity of opinion as to the influence of an individual's inborn propensities upon his early home training and subsequent school education. One of the most direct ways of disentangling this knotty but important problem is to be sought in a comparison of adopted persons with their real and adopted relatives. To this end a collection of data is being made by the writer on schedules intended to make comparison less difficult. He would be greatly obliged if anyone knowing of a case would write for a schedule. The name of the family studied is not asked for, and the information will be used for statistical purposes only. The name of the recorder will be published or not, according to his wish. Information supplied by schoolmasters is particularly desired, because they have so much practice in judging and comparing the mental qualities of individuals. Let no one think that a case is not worth recording because it has no outstanding features, or because it is in harmony with or runs counter to prevailing opinions. Enquiries should be addressed to—

LEWIS F. RICHARDSON,
ESKDALEMUIR, LANGHOLM, SCOTLAND.

Completion of Vol. 2.

With the issue of this number, Vol. 2 of the Journal is completed. An index to the Volume will be issued with the March number.

TRAINING COLLEGE ASSOCIATION.

IMPORTANT.

The 23rd Annual Meeting of the Association will be held at the CAXTON HALL, WESTMINSTER, S.W., on FRIDAY, DEC. 18th, 1914 (Morning and Afternoon).

There will be a Social Gathering on the evening of that day at the London Day Training College, Southampton Row, W.C.

Detailed programme will be issued shortly.

MINUTES OF COMMITTEE MEETING on Oct. 9th, 1914.

The following signed the attendance roll:—Rev. Canon Stevenson (President) in the chair, Miss Lloyd Evans and Professor T. P. Nunn (Vice-Presidents), Miss M. M. Allan, Rev. A. M. Aynsley, Mrs. Bannister, Mr. A. Barriball, Miss E. Christopher, Miss M. Copsey, Rev. Canon Dennis, Miss M. Drury, Miss F. Exton, Miss B. Forth, Miss E. M. Gowan, Miss C. C. Graveson, Miss S. J. Hale, Mr. D. R. Harris, Mr. I. B. John, Miss F. E. Johnson, Miss E. M. Julian, Rev. J. Leonard, Miss M. Liberty, Miss C. G. Luard, Rev. V. W. Pearson, Miss S. E. S. Richards, Miss M. S. Ryan, Miss A. D. F. Salmond, Miss M. Saunders, Miss F. M. Smith, Miss K. T. Stephenson, Rev. D. J. Thomas, Rev. R. A. Thomas, Rev. Dr. Workman, and the Secretary.

(1) The minutes of the Special Meeting of June 5th were confirmed.

(2) The following nominations for Vice-Presidents (2) for 1915 were received:—

Miss Allan, Miss Lloyd Evans, Miss Julian, Miss Wodehouse, Professor J. J. Findlay, Mr. Gettins, Mr. Hendry, Professor J. Welton, Rev. Dr. Workman.

(3) The Representative Sub-Committee was appointed to make the arrangements for the Annual Meeting on Dec. 18th (*see special notice*).

(4) The following Sub-Committee was appointed to consider the Board's Draft Suggestions on the Teaching of Nature Study:—

Miss Bazeley (Whitelands), Miss Frodsham (Fulham), Miss von Weiss (London Day), Mr. Rollings (Westminster), Mr. Townsend (Hull), with the officers ex-officio, and power to add to their number if necessary.

(5) An important letter from the Board was read, on the question of the standard to be adopted in awarding "passes with distinction" and "passes with credit" (1913 Regulations).

It was decided to ask permission to print and circulate the letter to Principals, for the consideration of themselves and their Staffs, and the Representative Sub-Committee was appointed to deal with the letter, with power to add to their number, such additions to represent chiefly or entirely Colleges taking the Board's Examination.

(6) The matter of the Board's Circular to the Colleges on Enlistment (of date Aug. 26th) was brought forward by the Rev. V. W. Pearson, and, after some discussion, it was decided to refer the matter to a Sub-Committee consisting of the Principals of Colleges for Men, with power to act.

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